

Coal Age

A MCGRAW-HILL PUBLICATION

APRIL, 1949



BETTER BARGAINING .. p. 74

BP Gear Steel
means more miles per dollar...

...for example*



YOU CAN BE SURE... IF IT'S
Westinghouse

*The example is the record of this *BP Gear Steel* pinion in transportation service . . . 14 years of continuous operation!

This kind of service means more trips per dollar . . . and money in the bank for any mine operator. The diagram illustrates why exclusive Westinghouse *BP Gear Steel* stands up better, longer, under the heavy loads and severe shock encountered in mine-locomotive service.

BP processing gives you gears with graduated hardness from surface through the root of the gear tooth . . . gives you the combination you need for mine service . . . strength, toughness and high resistance to wear.

Get the facts from your nearest Westinghouse office on how *BP Gear Steel* can contribute to your operating economy. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-07270

FOR TOUGH JOBS... **Westinghouse**



Gears



Hose that breathes scalding steam

A typical example of B. F. Goodrich product improvement

THAT'S a pile driver at work, driving those logs into the river bottom for a new dock as easily as you'd drive a tomato stake in your garden. Steam—388° hot—provides the muscle. The steam flows through that special hose and pushes up the big iron weight. The steam is cut off, down comes the weight, the stake gets a pounding.

But steam that hot burned any hose carrying it. Weakened by the burn, the hose would suddenly burst—scalding, sometimes even killing workers.

B. F. Goodrich, with experience in making hundreds of kinds of hose, set out to stop this danger and waste. First they developed a rubber for the lining—a new kind of rubber that stands extreme heat without burning.

Then, instead of cotton cords to bind the rubber (cotton burned, too) BFG used fine, flexible, strong wire—one size has a quarter mile of it per foot of hose. Then more heat-resisting rubber, asbestos cord, and wear-resisting rubber for the outer cover.

The result is a hose B. F. Goodrich

can call *Burstproof*. It has never been known to burst in service. On job after job it has lasted 4 and 5 times as long as any other hose ever used. It protects workmen, cuts replacement costs, keeps work flowing smoothly without shutdowns for repairs.

There is only one Burstproof steam hose made—B. F. Goodrich. For this safer, better hose call your B. F. Goodrich Distributor or write The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.

B.F. Goodrich
RUBBER FOR INDUSTRY

More Friction Devils **hate HULBURT--**



Yes, if you could make a mine-wide survey among the millions of FRICTION DEVILS in coal mines — you'd find the LUBRICANT they hate most and flee fastest is HULBURT QUALITY GREASE

HULBURT OIL & GREASE COMPANY, PHILADELPHIA, PA.

Specialists in Coal Mine Lubrication

-than any other grease!



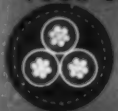
gets right down and kills troubles in the
"F (friction)-ZONE" in your mine — avoids
breakdown irritation. Use HULBURT
Lubrication Engineers without obligation!

AT NO EXTRA COST NEW HAZAPRENE ZBF* JACKET

gives you greater flame-resistance... greater wear-resistance
... longer, trouble-free life **IN SHOVEL CABLE**



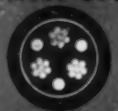
YOUR CHOICE TO MEET OPERATING CONDITIONS AND VOLTAGES



Type H-1



Type H-2



Type H-3



Type H-4



Type W



Type G

ELECTRIC shovel cable has to take more kinds of punishment day in and day out than any other mining cable. With this new Hazaprene ZBF Jacketed shovel cable you'll find a solid answer to every sort of severe service problem you're up against.

Flexible, Hazaloy-coated conductors are fully protected electrically with Hazard's safer, longer-lived, *heat-resisting* insulation. Permanently colored Okonite-developed from asbestos and neoprene is precision wrapped around each insulated conductor. It seals into a flame-resistant, moisture-resistant, non-rotting protective covering... provides greater flexibility and protection against mechanical damage, as well as lasting conductor identification. For still more cushioning qualities and flexibility... and moisture tightness at cable ends — Hazaprene fill is used in the conductor interstices in place of the usual fibrous materials. Tough outside protection that prolongs cable life is provided by a pressure-cured, unusually dense, reinforced, double layer Hazaprene ZBF Jacket. This Hazaprene ZBF Jacket provides greater resistance to flame and mechanical damage than was ever obtainable before. And, like other neoprene com-

pounded sheaths, it remains unaffected by moisture, oil, sunlight, acids, etc.

For longer-lived, safer shovel cable, it will pay you to get all the information about new Hazaprene ZBF Jacketed Shovel Cable from your Hazard representative today, or write us, Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

* ZBF ZINC BORATE FORMULA

Flame tests have shown that Zinc Borate imparts greatly increased fire-resistant properties to neoprene compounds with burning rates reduced by as much as 20% and weight losses by as much as 40%. Afterglow is materially reduced also. Millions of feet of cable protected by this type of jacket conditions to gain extra fire protection. Hazaprene ZBF Jackets mean not only greater safety because of unusual flame-resistance and lack of afterglow — but also longer life through increased resistance to abrasion, wear and tear.

HAZARD

insulated wires and cables for every mining use

6074

Better Bargaining for Coal.....	74
New Unit Speeds Strip Haulage.....	80
Safety Steps at Old Ben No. 9.....	84
Storage-Battery Maintenance—K. A. VAUGHAN.....	89
Rewarding Coal-Mining Merit—HARRY C. WALTER.....	92
Maid Marian Preparation.....	96
Unit Man-Trip Cars Switched Into Sections Save Time.....	108
Balanced Pipe Gates Block Strip-Mine Roads.....	108
Scrap Conveyor Belting Cradles Armatures.....	110
Rotary-Dump Maintenance.....	110
Drill Rigs and Special Bits Speed Prospect Drilling.....	112
Shop Crane Slides Pit Covers Between Rails.....	114
Outside Office Is Built Underground With Mining Equipment.....	114
Bronze Bearing and Pin Improve 90-Deg. Shaker Unit.....	116
Unit-Mounted Cable Reels Ease Conduit Wiring.....	116
Goggle Cleaning Made Easy.....	116
Editorials.....	73
Foremen's Forum..... 104	News Round-Up..... 119
Coal Men on the Job..... 124	Equipment News..... 160

COAL AGE (with which is consolidated "The Colliers Engineer" and "Mines and Minerals") is published monthly on the 1st. Allow at least ten days for change of address. COAL AGE articles are indexed regularly by Engineering Index. For COAL AGE's own index published annually may be had on request to the Editorial Department. Contents Copyright 1949 by McGraw-Hill Publishing Co., Inc.; all rights reserved.

McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder, James H. McGraw Jr., President; Curtis W. McGraw, Vice President and Treasurer; Eugene Buffell, Executive Assistant for Publications; Nelson Bond, Director of Advertising; Joseph A. Gerardi, Secretary; Dexter Kottler, Director, Economic Department; J. E. Blackburn Jr., Director of Circulation.

Subscription Information: All communications about subscriptions should be addressed to the Director of



Circulation, COAL AGE, 210 South Desplaines St., Chicago 5, Ill., or 120 W. 42nd St., New York 18, N. Y. Please indicate position and company connection on all subscription orders. Subscription rates: United States and possessions, \$5 for one year, \$8 for two years, \$10 for three years. Canada, \$6 for one year, \$10 for two years, \$12 for three years. Foreign, \$10 for one year, \$16 for two years, \$22 for three years. All other countries, \$15 for one year, \$25 for two years, \$30 for three years. Single copies: U. S. and possessions and Canada, 50¢; Pan-

American countries, 75¢; all other countries, \$1.50. Entered as second class matter Aug. 27, 1948, at the Post Office at Chicago, Ill. under the Act of March 3, 1879. Return postage guaranteed. Printed in the U. S. A. Cable Address: "McGraw Hill, N. Y." Member A.B.P. Member A.R.C.

Publication Office: 210 South Desplaines St., Chicago 5, Ill. Editorial and executive offices: 120 W. 42nd St., New York 18, N. Y. Branch offices: 120 North Michigan Ave., Chicago 11, Ill.; 68 Post St., San Francisco 4; Aldwych House, Aldwych, London, W. C. 2, Washington, D. C.; Philadelphia 2; Cleveland 11; Detroit 26; St. Louis 1; Boston 10; Atlanta 3; Los Angeles 11; 238-9 Oliver Bldg., Pittsburgh 22.

District Managers: T. E. Aiken and F. W. Root, New York; W. A. Potter, Philadelphia; W. M. Spears, Cleveland; H. C. Chellon, Pittsburgh; C. J. Conah, St. Mark, Chicago.

**Cost of
Industrial
Eye Accidents
UP *78½%**

*SINCE 1939

**BUT IT'S AN EXPENSE
YOU CAN CUT 98%
IN THESE DAYS OF
STILL INFLATED COSTS!**

At a \$15 average, even a *minor* eye accident costs too much in lost time, idle machine time and medical care—even in periods of normal costs.

Today, like everything else, eye injury costs are UP—but *unlike* everything else, **THEY CAN BE CUT, DRASTICALLY.**

98% of eye accidents are preventable when workers wear SAFETY GOGGLES, according to The Society for the Prevention of Blindness...and management has found the costs of the protection infinitesimal as compared to the costs of injuries saved. Your nearest MSA Representative can show you many case histories in *your* industry alone which prove conclusively that adequate protection pays off. Ask him to call.

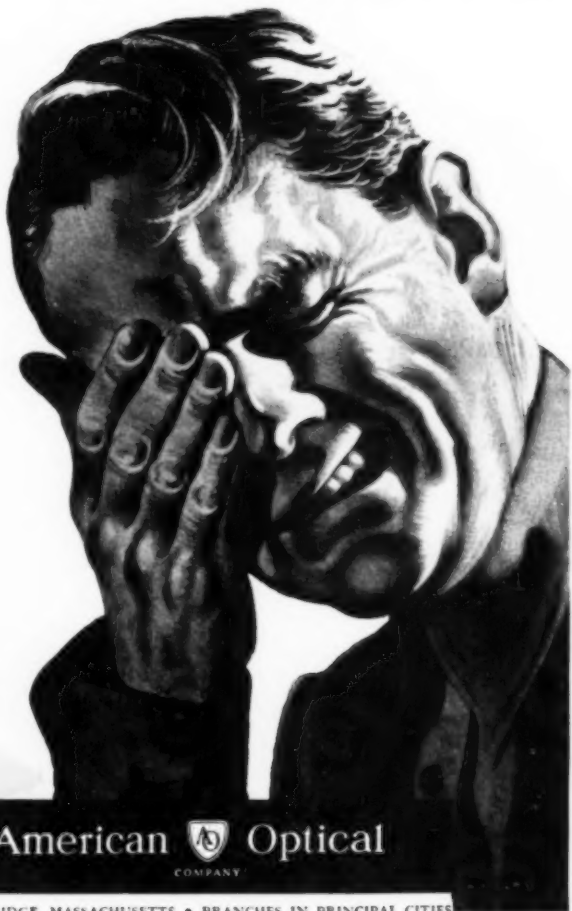


Safety Products Division of

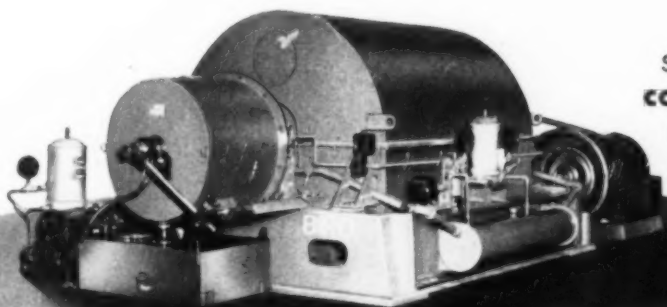
American Optical

COMPANY

SOUTHBIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



*This **BIRD** is **All** you need
To Take the Water Out of Your Fine Coal*



See it at the
COAL SHOW
Booth 708

The BIRD Coal Filter is the only single piece of equipment that will do the complete job of dewatering your fine coal after washing. It gets the coal as dry or dryer than you can get it by any other means and replaces a series of complex and expensive operations.

The BIRD permits you to operate a closed water system. It handles large tonnages and runs for long periods without maintenance shutdowns.

Thousands of tons per day of fine coal are now being dried in Bird Filters.

May we mail you the new Bulletin containing the complete story?

BIRD MACHINE COMPANY, South Walpole, Mass.

The BIRD

**Continuous Centrifugal
COAL FILTER**

Want to Boost Output



MANY COAL OPERATORS HAVE INCREASED OUTPUT WITH RIPL-FLO SCREENS . . . HOW ABOUT YOU?

RIPL-FLO VIBRATING SCREENS transmit a smooth, circular motion to every point on screen surface . . . resulting in rapid stratification with no "dead" spots on screen. That means increased capacity — lower screening costs for you!

They're built with only two bearings. Elimination of outer bearings and main frames reduces width 17 percent over comparable screens; weight by as much as 36 percent. Lower power requirement — less maintenance!

Screen surfaces can be

changed or tensioned quickly by means of convenient clamping plates. Side frames are identical to allow installation of additional decks in the field.

Modern Ripl-Flo screens are widely used for screening ROM coal in sizes up to 22 inches . . . for sizing egg, range and stoker grades . . . for refuse dewatering.

Coal men like the many high strength features built into Ripl-Flo screens. High tensile steels . . . all-welded construction . . . "stress-relieved" to eliminate strain around welds.

Experienced Allis-Chalmers field engineers are trained to help you select equipment that's right for your job.



Ripl-Flo screen sizes are 3 by 6 to 6 by 16 ft. For more information contact the A-C representative in your area or write for Bulletin 0786151B.

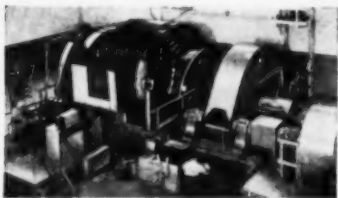
ALLIS-CHALMERS, 968A SO. 70 ST.
MILWAUKEE, WIS.

...Cut Costs?

**OTHER COST-CUTTING
TONNAGE-INCREASING
PRODUCTS FOR COAL**



CW SOLIDS PUMP—Designed especially for coal washing. Has only five easily accessible working parts which can be removed without disturbing piping. Handles up to 40% solids in suspension. Allisite parts give high abrasion resistance. Bulletin 0886381B.



ALL-ELECTRIC HOISTS—Allis-Chalmers builds hoists plus all auxiliaries . . . in any size . . . each installation specifically engineered for your requirements. Automatic Regulex control assures smooth operation at peak loads, low hoisting costs.



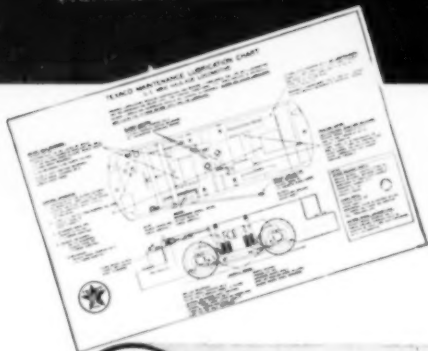
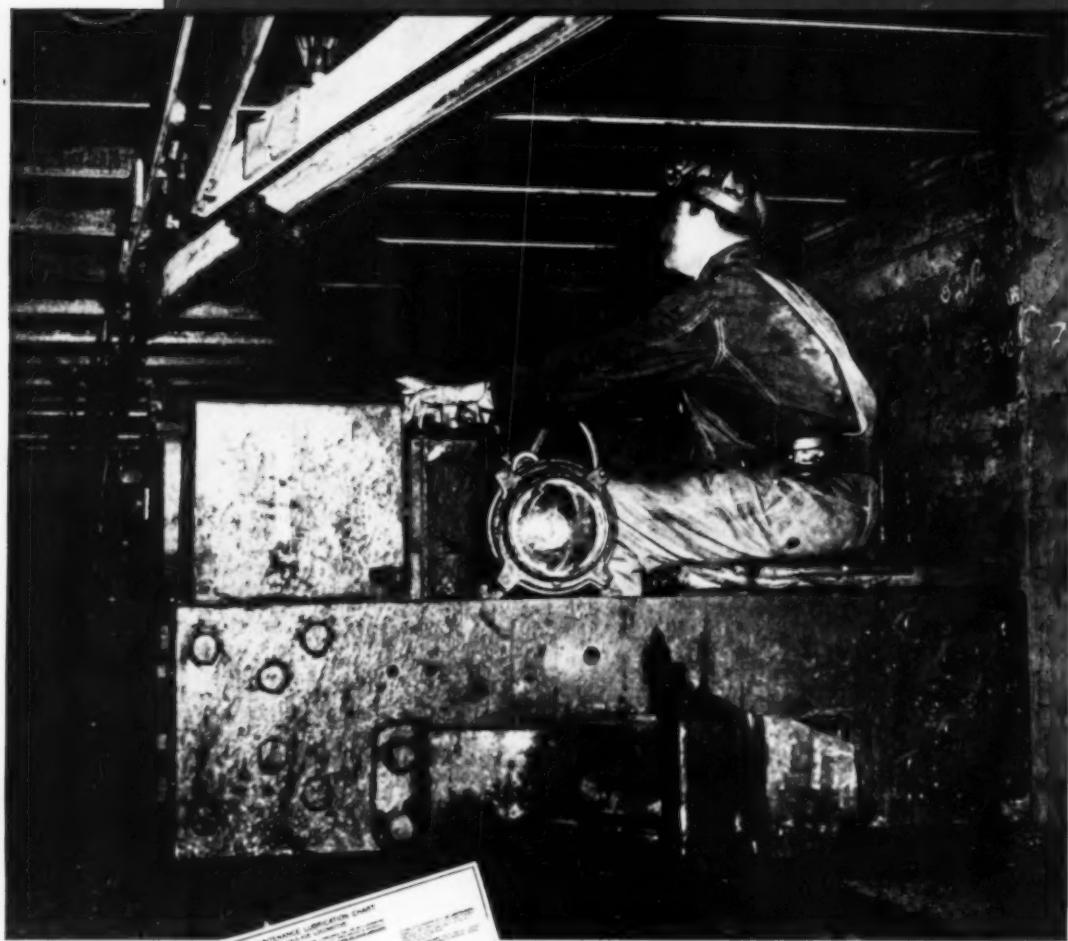
LOW-HEAD VIBRATING SCREENS—Used with reverse End-Tension Deck for dewatering small sizes of stoker grade coal and for screening and dewatering sludge . . . with side tension deck for dewatering larger coal. Sizes 3 by 6 to 6 by 16 ft. Bulletin 0786330A.

A 2560

Ripl-Flo, Low-Head, Allisite and Regulex are Allis-Chalmers Trademarks.



ALLIS-CHALMERS **... Builds for Coal Progress!**



TEXACO MAINTENANCE LUBRICATION CHARTS: Leading manufacturers of underground coal mining machinery approve Texaco products for use on cutters, loaders, locomotives, etc., and have cooperated in preparing these charts. Charts show clearly where and when to use the proper Texaco lubricant. Order the charts you need by make and model of each machine.

Tune In . . .
TEXACO STAR THEATRE
 presents **MILTON BERLE**
 every Wednesday night.
 See newspaper for time
 and station.



TEXACO LUBRICANTS

REDUCE MAINTENANCE COSTS

**Use the lubricant that gives
lasting protection to anti-friction
bearings—Texaco Regal Starfak**

YOU gain three major benefits when you pack your grease-lubricated ball and roller bearings with *Texaco Regal Starfak* — your bearings last longer . . . your maintenance costs come down . . . and your production goes up, because trouble-free performance is assured.

Texaco Regal Starfak stands up under severe conditions. Its resistance to oxidation and gum formation, to separation and leakage is remarkable. Temperature changes have virtually no effect on it. It reduces "drag" in starting and running your machines.

Count on *Texaco Regal Starfak* to give your bearings full protection for longer

periods — making fewer applications necessary.

In anti-friction bearings in low-speed, heavy-duty service, use long lasting *Texaco Marfak Heavy Duty*. You'll assure tiptop bearing performance . . . longer bearing life . . . lower maintenance costs.

Let a Texaco Lubrication Engineer help you increase the operating efficiency and economy of all your machines. Call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, *National Sales Division*, Dept. C., 135 East 42nd Street, New York 17, New York.

For the Coal Mining Industry

New angle on refuse disposal

**Compass Steel-Cable belt lifts
400 T.P.H. over 487-foot hill**



FINDING a disposal area for rock, slate and other refuse from a new cleaning plant was the problem of a large West Virginia coal company. The closest available site was on the far side of a steep hill, 1,500 feet away. Anxious to take advantage of the proven economies of conveyor belt haulage, the operator called in the G.T.M. — Goodyear Technical Man.


He was given the problem of designing a belt to run directly from the plant to the summit of the hill, supported on a suspension bridge inclined at a 19° angle. The discharge end would be 487 feet above the loading point, and 400 tons per hour would have to be carried.

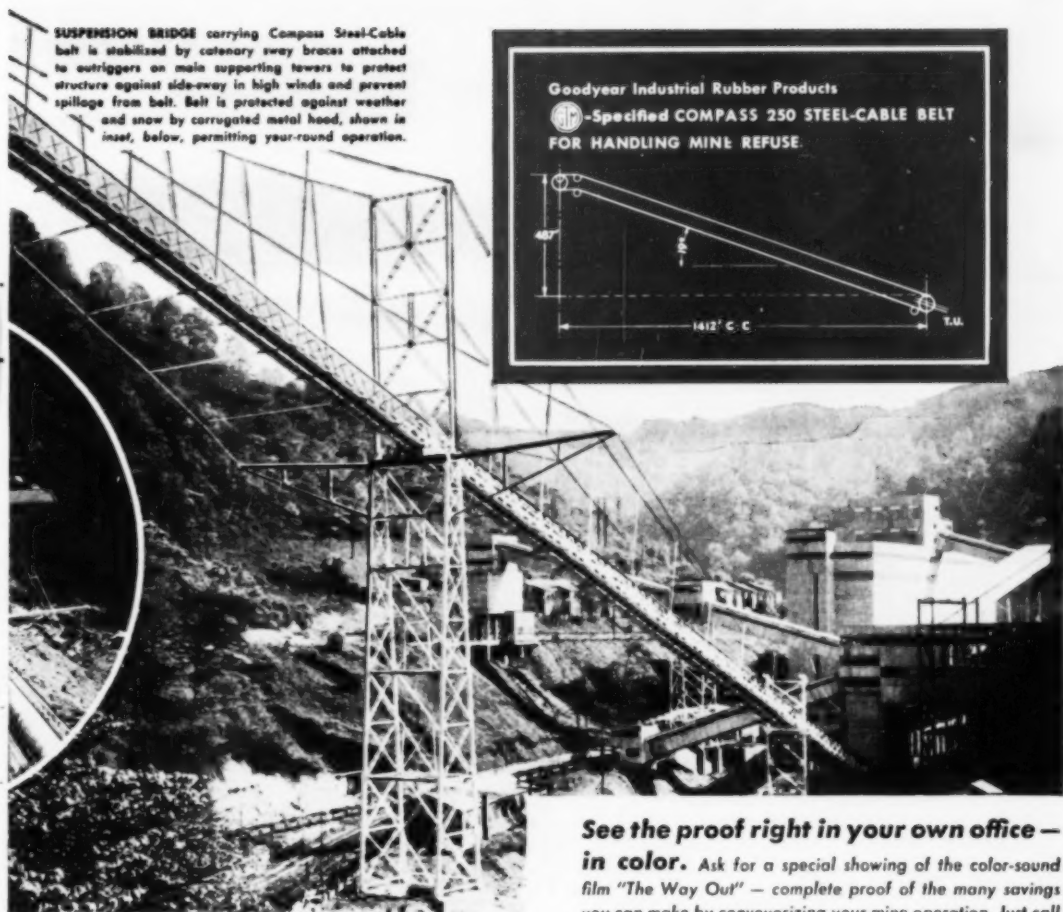
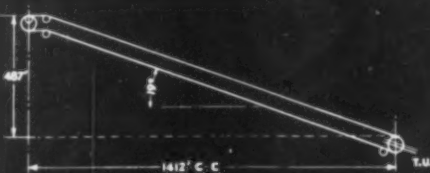
To handle this heavy-duty job, the G.T.M. specified a Goodyear COMPASS 250 Steel-Cable conveyor belt, 30 inches wide, operating at 400 feet per minute. The super-strength of COMPASS steel-cable-bodied construction, which provides far greater tension and load capacity than any other type of belt, made it possible to employ a single-flight belt, on 1,412-foot centers.

When operating engineers confirmed the practicality and economy of the G.T.M.'s proposal, the installation was made. More than one million feet of finely stranded, high-tensile steel cables were used to sinew the belt which was vulcanized endless on the job by Goodyear's patented vulcanized-splice. Now in operation, it is proving to be an out-

SUSPENSION BRIDGE carrying Compass Steel-Cable belt is stabilized by catenary sway braces attached to outriggers on main supporting towers to protect structure against side-sway in high winds and prevent spillage from belt. Belt is protected against weather and snow by corrugated metal hood, shown in inset, below, permitting year-round operation.

Goodyear Industrial Rubber Products

-Specified COMPASS 250 STEEL-CABLE BELT FOR HANDLING MINE REFUSE.



standingly successful installation.

The G. T. M. can draw on his detailed knowledge of conveyor belts to help you find your best answer to low-cost handling of coal or spoil, below ground or above. Ask him for dollars-and-cents figures on savings accomplished by other mines. Or write Goodyear, Akron 16, Ohio.

See the proof right in your own office — in color. Ask for a special showing of the color-sound film "The Way Out" — complete proof of the many savings you can make by conveyorizing your mine operation. Just call your nearest Goodyear Industrial Rubber Products Distributor,

listed in your classified telephone directory.



FREE

Complete picture story of savings with belt conveyor system. Send for free copy.

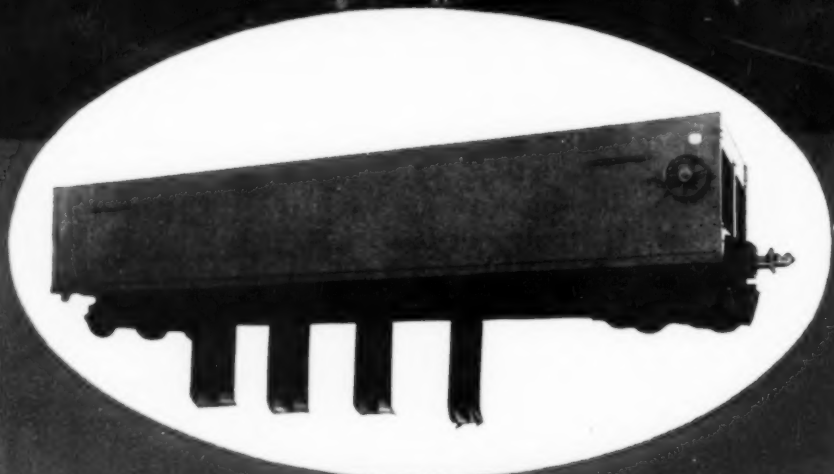
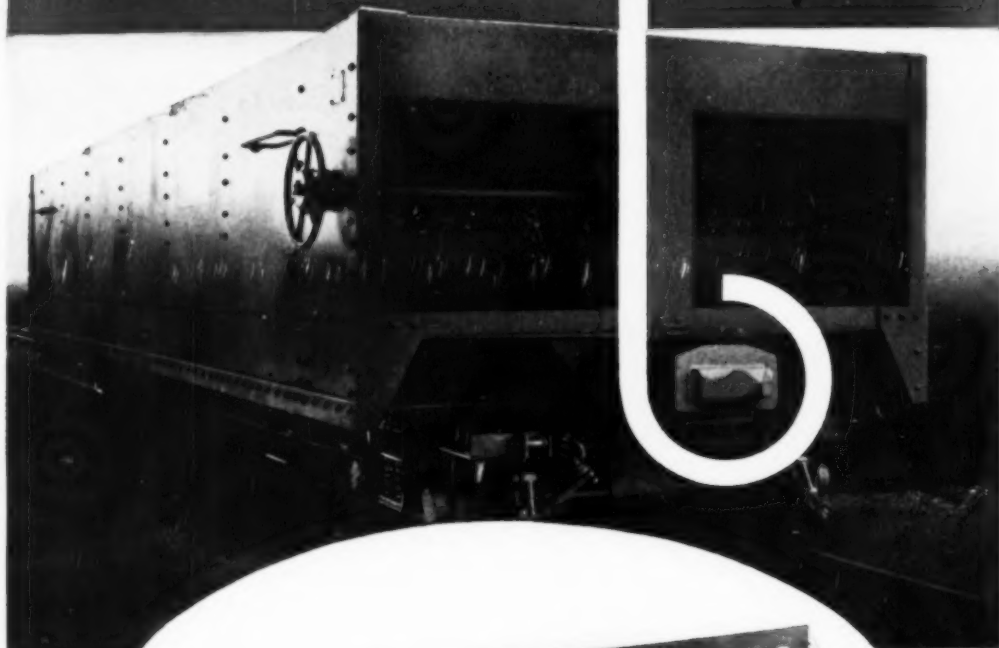
Goodyear-T.M. The Goodyear Tire & Rubber Company

GOOD YEAR

THE GREATEST NAME IN RUBBER

HERE'S THE COUPLER YOU NEED

*to make your mine car
modernization complete*



O-B Automatic Couplers installed on a large drop-bottom mine car. Ideally suited for drop-bottom cars, O-B Form-S Couplers and Anchor-eyes can be mounted entirely on the outside of the car.

Photographs Courtesy of Standard-O-B Iron Works, Inc.

INVESTIGATE THESE

Five Reasons

Why O-B Automatic Couplers
Will Help You Haul More Coal
for Less Money!

1. LESS MAINTENANCE Removing from 12 to 15 feet of dead slack from every trip, O-B Couplers eliminate the damaging impacts and distorting side strains which increase in severity with the weight of the car. Less maintenance is required. Coupler-equipped cars spend little time in the repair shop; they stay on the job hauling coal.

2. GREATER SAFETY With O-B Couplers, workmen need not go between the cars to manipulate treacherous hitchings. Neither must they align the coupler heads to assure a positive connection. O-B's enclosed self-centering device brings coupler heads to center position, and a wide gathering range permits coupling on all normal curves without manual adjustment.

3. FASTER OPERATION More coal can be handled faster with O-B Automatic Couplers. Saving time at loading, gathering and dumping points, coupler-equipped cars spend more time "on the go" ... make more trips per day. A rotary coupler head makes uncoupling unnecessary at rotary dumps—another "time-saver."

4. MORE PAY LOAD O-B Couplers give the coal a "sleeper ride." Jolting and banging is minimized. All coal loaded at the face reaches the tipple. In addition, the haulage-way stays free of spilled coal ... eliminates periodic clean-ups.

5. INCREASED TRACK STABILITY Rigid steel-beam connections keep the cars in line ... cut down derailments. The elimination of dead slack promotes a more even distribution of stresses and prevents bumper-to-bumper impacts. An ingenious rubber draft gear arrangement on the Form-8 Coupler affords a 100,000-lb. capacity and actually exerts pressure which holds the cars in the center of the track.

Because of these five basic advantages, O-B Automatic Couplers can improve the operation of your entire haulage system. Why not complete your mine car modernization by installing

O-B Couplers? Specify them on your next major purchase of new cars. Once you've tried them, you'll never again want to go back to old-fashioned links and pins.

3022-AM

Ohio Brass

MANSFIELD, OHIO

Canadian Ohio Brass Co., Ltd.,

Niagara Falls, Ontario



*Make this Test
with ANY V-Belt*

You'll See at Once Why the

CONCAVE SIDE...

(U.S. Patent No. 1813698)

Saves You Money!



Bend any V-Belt and feel the sides change shape. The top of the belt, under tension, *narrows*. The body, under compression, *widens*. The sides of the belt bulge out.

The result, if the belt is built with *straight sides*, is a shape that does not fit the sheave groove—as shown in Figures 1 and 1A, below.



Straight-Sided V-Belt



How Straight-Sided V-Belt Bulges in Sheave-Groove

Clearly, the bulging of the sides will produce excessive wear along the *middle* of the sidewall as indicated by arrows.



Gates Vulco Rope with Concave Side.

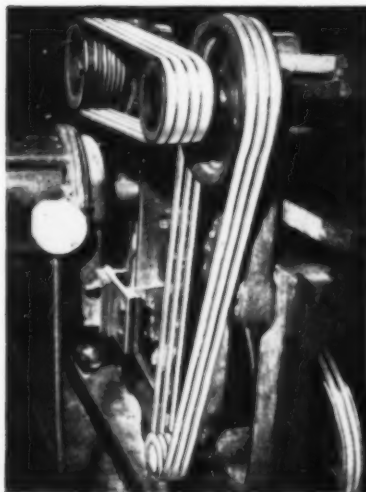


No Side Bulge. Precise Fit in Sheave-Groove.

Now, bend a V-belt with the *concave side*—the Gates Vulco Rope.

You get the same shape change but *now* the new shape exactly fits the sheave groove—as shown in Figures 2 and 2A.

Results? (1) *Uniform* sidewall wear; *longer life!* (2) Full sidewall grip on the pulley. Carries heavier loads and *sudden load increases* without slippage; saves belts and also saves *power!*



The Concave Side is **MORE IMPORTANT NOW** Than Ever Before

Because the *sides* of a V-Belt are what actually *drive* the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley *directly* through the belt's sidewalls.

Now that Gates **SPECIALIZED** Research has made available to you **SUPER Vulco Ropes**—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side is naturally more important in conserving belt life today than ever before.

THE GATES RUBBER COMPANY
DENVER, U.S.A.

The World's Largest Makers of V-Belts

494



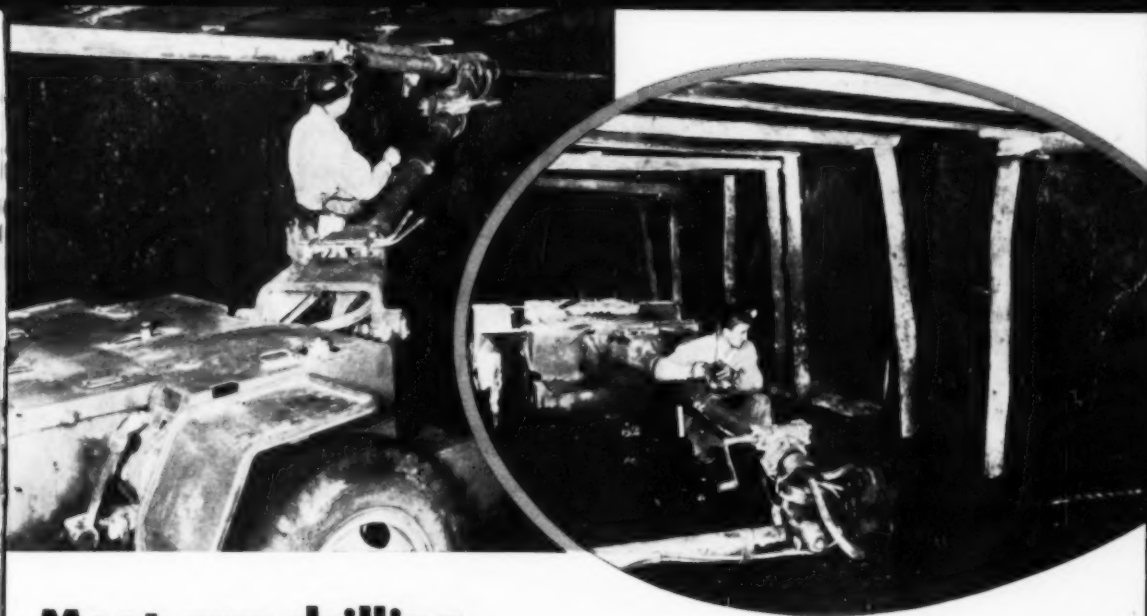
The Mark of **SPECIALIZED** Research

GATES VULCO ROPE DRIVES

Engineering (Gates and Rubber Marks)

IN ALL INDUSTRIAL CENTERS

of the U. S. and 75 Foreign Countries



Meet any drilling condition instantly with the ***FAST, MOBILE***

JOY CD-25 COAL DRILL

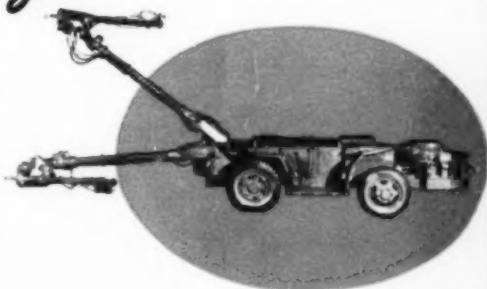
Check these operating advantages

✓ INFINITELY VARIABLE ROTATION SPEED, hydraulically operated—an exclusive JOY feature. You can increase feed independent of rotation for soft spots, or increase rotation independent of feed when the drilling gets tough.

✓ COMPLETELY HYDRAULICALLY CONTROLLED—with all controls centrally located for safe, easy one-man operation.

✓ TRACKLESS, SELF-PROPELLED, FAST-TRAMMING—will cut down over-all drilling time and keep ahead of any loader.

✓ ONLY 36 INCHES HIGH—for work in all but the thinnest seams. Drills 9-ft. holes anywhere from 6 inches to 5½ feet above the floor.



The JOY CD-26, a twin-boom hydraulic drill. High-powered for heavy-duty drilling—can handle large Airdox holes.

WRITE FOR BULLETIN, OR

Consult a Joy Engineer



JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

W80 CL 2411



OLD KING

...And NEW



NEW CARS FOR HIS MAJESTY!

Miles of new coal cars form part of the NEW in New York Central. And they'll be needed! For the expanding chemical and synthetic oil industries ... the rise in steel and electric power output ... the increased production of cars, electric appliances and other manufactures in which coal is an unseen ingredient ... are all creating a record demand for coal.



KING COAL'S "BOAT TRAIN!"

All through the Great Lakes navigation season, New York Central coal trains roll down from Kentucky, Ohio, Pennsylvania, Tennessee and West Virginia to modern docks at Toledo, Ashtabula and Oswego. Huge electric car dumpers load the coal on ships at top speed with minimum breakage. Such efficiency counts with Lake coal cargoes topping 50,000,000 tons a year!



KILOWATTS BY THE CARLOAD!

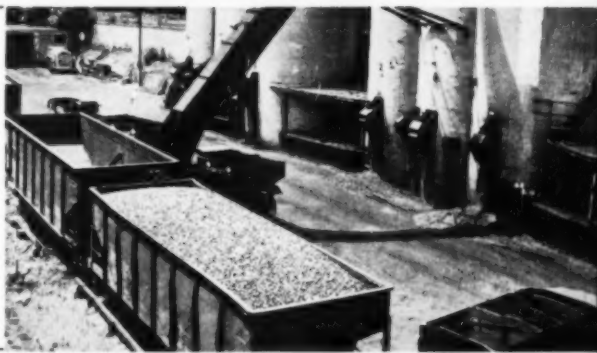
In eleven States and two Canadian provinces New York Central keeps the vital coal flowing to electric generating plants. Here, especially, dependable, all-year, all-weather transportation is important. And it's getting more important every day ... with the needs of America's coal burning electric light and power industry due to pass 300,000,000 tons a year in 1950.

COAL is going places! going in style on YORK CENTRAL



HOME STOKER—KING'S SIZE!

Linking America's most populous area with some of the nation's richest coal producing areas, New York Central acts as a vast and efficient mechanical stoker. It picks up coal from the mines and other railroads. And it delivers an endless black stream at local coal yards of cities, towns and villages to keep the home fires burning for millions of American families.



A LOOK AT HIS MAJESTY'S FUTURE

New York Central is co-operating with the coal industry and other railroads in a multi-million-dollar program to develop a new type of coal-burning gas turbine locomotive. The turbine in turn, will generate electricity for the smooth, driving motors. Already, experimental models indicate this may provide the clean, quiet, low-cost railroad motive power of tomorrow.



COAL EXPERIENCE THAT IS YOURS TO COMMAND!

For help with your coal shipment or fuel supply needs, consult any of these New York Central coal traffic representatives:

JOS. R. O'MALLA, *Gen. Coal Traffic Manager*, New York, N. Y.
P. P. BELLIZ, *Coal Traffic Manager*, Cleveland, Ohio
R. K. HORTON, *General Coal Freight Agent*, New York, N. Y.
A. W. MORDAN, *General Coal Freight Agent*, Chicago, Ill.
F. P. SOHN, *General Coal Freight Agent*, Cleveland, Ohio
R. E. ROGERS, *General Coal Freight Agent*, Pittsburgh, Pa.
A. W. BETHRENS, *General Coal Freight Agent*, Detroit, Mich.
G. W. CHILDERS, *Coal Freight Agent*, Cincinnati, Ohio

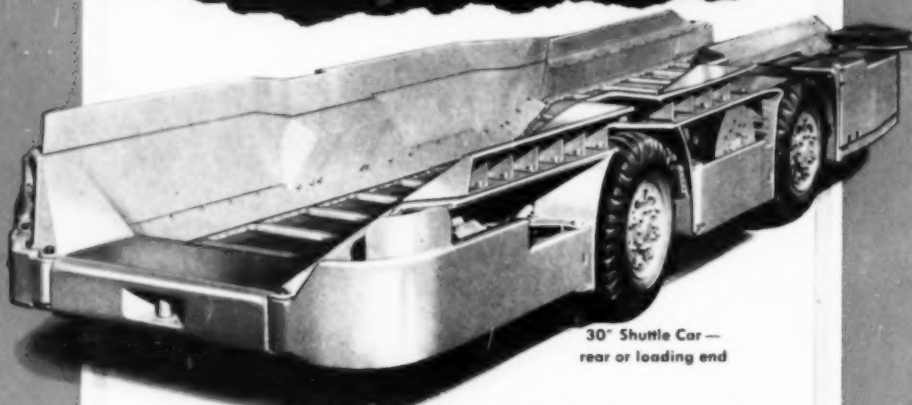
NEW YORK CENTRAL COAL TRAFFIC DEPARTMENT
General Offices: 466 Lexington Ave., New York 17, N. Y.



JEFFREY

SHUTTLE CARS

(Patented)



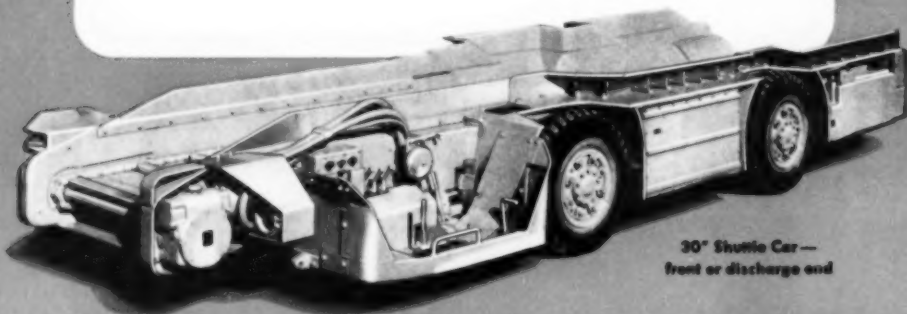
30" Shuttle Car —
rear or loading end

To meet the growing demand for rubber tired haulage underground Jeffrey offers three sizes of Shuttle Cars 30"—35"—43" with removable side boards for additional height and capacity.

Illustrated on this page are two views of the 30" Car for low-vein mining. Sizes and capacities of the three sizes with average topping are as follows:

Height	Side Boards	Capacity in Tons
30"	0	3.20
	6"	4.22
35"	0	3.75
	6"	4.80
43"	0	4.75
	6"	6.25
	12"	7.75

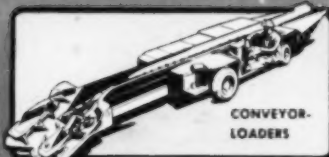
Jeffrey Engineers are available to help you determine the Cars best suited to your operating conditions.



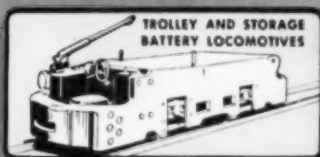
30" Shuttle Car —
front or discharge end



LOADING
MACHINES



CONVEYOR-
LOADERS



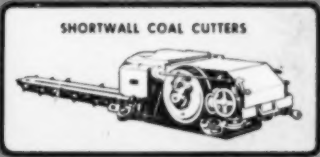
TROLLEY AND STORAGE
BATTERY LOCOMOTIVES



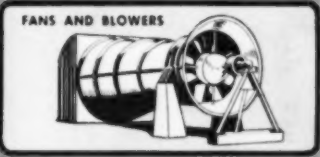
DRILLS AND DRILLING MACHINES



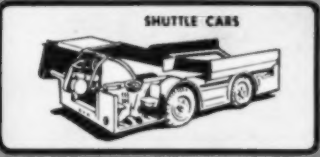
UNIVERSAL
COAL CUTTERS



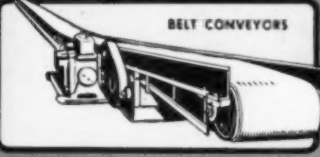
SHORTWALL COAL CUTTERS



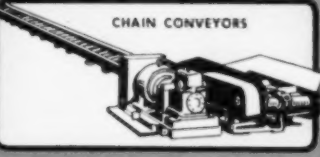
FANS AND BLOWERS



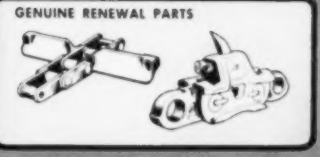
SHUTTLE CARS



BELT CONVEYORS



CHAIN CONVEYORS



GENUINE RENEWAL PARTS

JEFFREY

EQUIPMENT FOR COAL MINES

and

GENUINE RENEWAL PARTS



THE JEFFREY MANUFACTURING COMPANY

Established 1877

General and Export Sales Offices

COLUMBUS 16, OHIO, U. S. A.

DISTRICT SALES OFFICES

BALTIMORE 2, MD.
Russett Bldg.
BIRMINGHAM 3,
2210 Third Ave., N.
BOSTON 16,
38 Newbury Street
BUFFALO 2,
Jackson Building
CHICAGO 1,
Bell Building
CINCINNATI 2,
Carew Tower
CLEVELAND 13,
Rockefeller Building

DENVER 2,
Ernest & Cranmer Bldg.
DETROIT 13,
5804 St. Jean Avenue
HARLAN,
Kentucky
HOUSTON 5, TEXAS
3708 Rice Bldg.
HUNTINGTON 19, W. VA.
Guaranty Bank Bldg.
JACKSONVILLE 5,
4114 Forest Park Road
MILWAUKEE 2,
735 N. Water Street

NEW YORK 7,
30 Church Street
PHILADELPHIA 1,
Broad St. Station Bldg.
PITTSBURGH 22,
Oliver Building
SALT LAKE CITY 1,
101 W. 2nd South St.
ST. LOUIS 1,
Railway Exchange Bldg.
SCRANTON 1,
222 Adams Avenue

SERVICE STATIONS

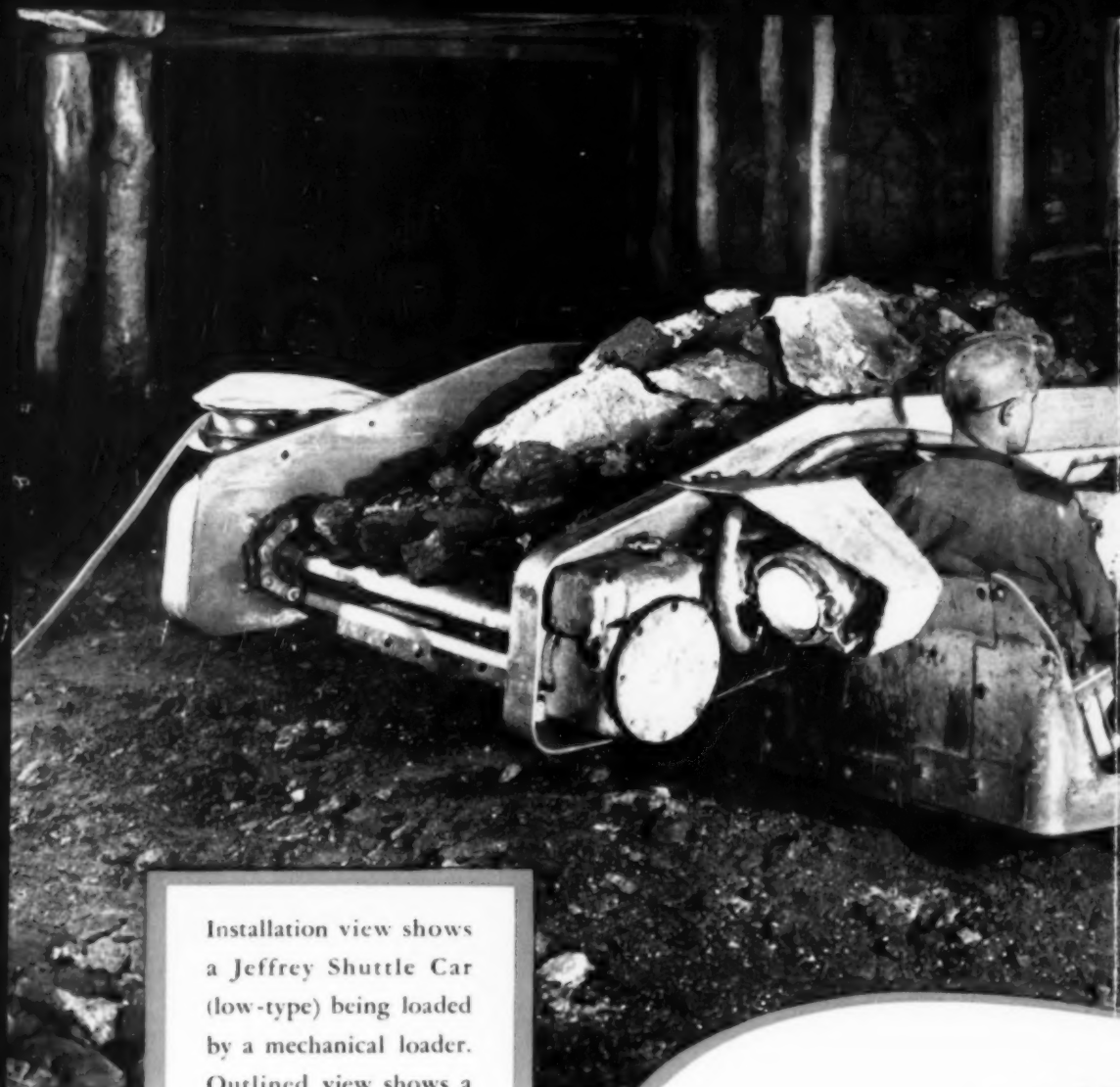
PITTSBURGH
SCRANTON

BIRMINGHAM
HARLAN, KY.

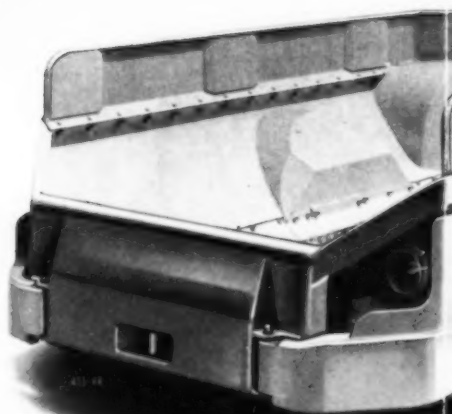
MT. VERNON, ILL.
LOGAN AND BECKETT, W. VA.

FOREIGN PLANTS

JEFFREY MANUFACTURING CO. LTD., Montreal, Quebec
BRITISH JEFFREY DIAMOND LTD., Wakefield, England
JEFFREY GALION (PTY.) LTD., Johannesburg

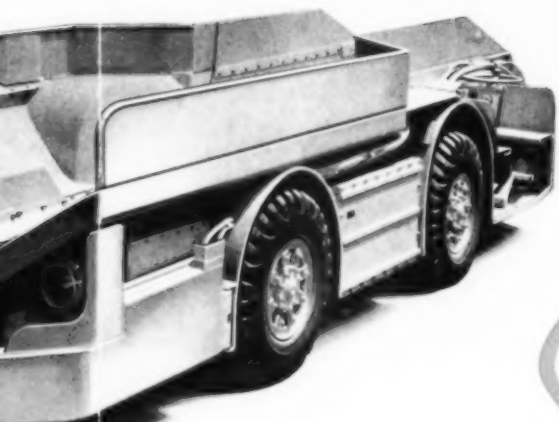


Installation view shows a Jeffrey Shuttle Car (low-type) being loaded by a mechanical loader. Outlined view shows a Jeffrey Class 65 Cable Reel Shuttle Car—43" size with 12" side boards.





87-29

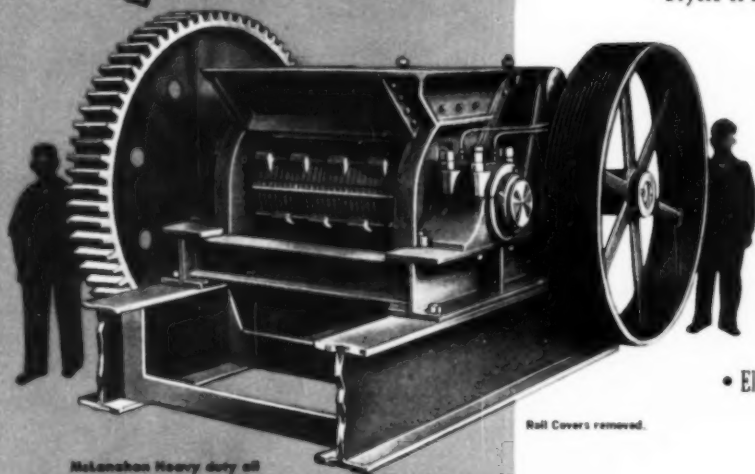


First! SINCE 1835

**DESIGNERS AND
BUILDERS OF
ECONOMICAL**

CRUSHING

and other Pit, Mine and Quarry
EQUIPMENT



McLanahan Heavy duty all steel *Eckhardt* crushers for primary and secondary work have proven outstanding in many installations for use on limestone, gypsum, shale, gravel, iron ore, open hearth slag and many other difficult crushing problems and operations.

THE THINGS WE BUILD . . .

Primary and Secondary
Single and Double Roll
Crushers for Every Capacity

- Jaw Crushers
- Portable and Semi-Portable Crushing Plants
- Dry Pans Super Heavy Duty
- Conveyors
- Dryers of Revolving Type
- Elevators
- Feeders
- Hoists
- Jigs
- Screens
- Washers
- Bearings
- Bin Gates
- Car Wheels
- Columns
- Elevator Buckets
- Gears
- Gratings
- Grate Bars
- Pulleys
- Rollers
- Sheaves
- Sprockets

**McLANAHAN AND STONE
CORPORATION**

Pit, Mine and Quarry Equipment Headquarters
Since 1835

HOLLIDAYSBURG, PENNSYLVANIA

NATIONAL ELECTRIC

SAFE

Indestructo

Cables for Mining Machines

NEOPRENE JACKETED



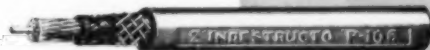
New Parallel Duplex Conductor Neoprene Sheathed Mining Machine Cable



Concentric Duplex Conductor Neoprene Sheathed Mining Machine Cable



New Parallel Duplex Conductor Neoprene Sheathed Mining Machine Cable with Grounding Conductor



Single Conductor Neoprene Sheathed Locomotive Gathering Cable

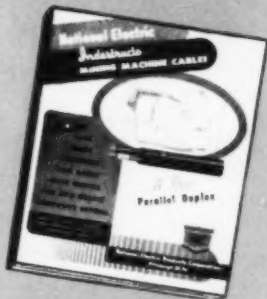


Three-Conductor Type SH-D Shielded Neoprene Sheathed Power Cable

More Durable • Safer • Fewer Replacements

Indestructo CORDS and CABLES for safer mining include:

- Parallel Duplex Cables
- Concentric Duplex Cables
- Locomotive Gathering Reel Cables
- Motor Lead Cables
- Drill Cords
- Miners' Lamp Cords
- Welding Cables
- Heavy Duty Portable Cords
- Light Duty Portable Cords



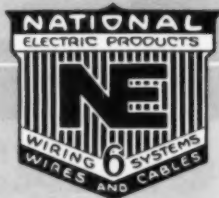
All NE Indestructo Mining-machine Cables exceed the flame-resisting requirements of Pennsylvania Act 206 and Federal Mine Safety Code.

Write for a copy of this new catalog; also see listings in "Mining Catalogs."

National Electric

PRODUCTS CORPORATION

1371 CHAMBER OF COMMERCE BLDG. PITTSBURGH 19, PA.



SINCLAIR TENOL

Engines Clean



*Keeps
Rings
Free*

*Prevents
Sticking
Valves*

*Assures
Clean
Screens*

*Cuts
Maintenance
Costs*

EUCLID

30

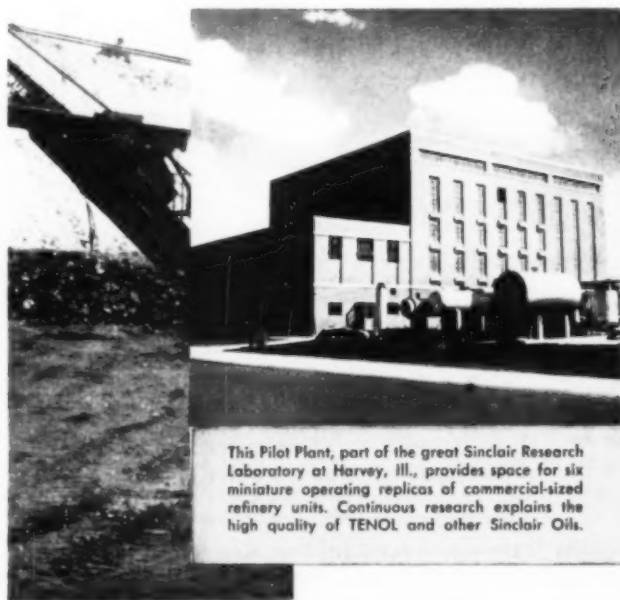
SINCLAIR

YOUR NEAREST SINCLAIR AGENT WILL GLADLY ARRANGE

Keeps Heavy-duty As It Lubricates

When sludge, carbon, gum or varnish are present in an engine, it means TROUBLE . . . sticky valve stems, stuck rings, clogged oil lines and screens. This leads to early and frequent overhaul and costly maintenance.

With Sinclair TENOL as the lubricant, these troubles need not be a problem—for TENOL keeps engines clean as it lubricates. Specially developed Sinclair additives retard oxidation and prevent gum and varnish from choking piston ring grooves, sticking valves, clogging oil passages and pump screens. Soot, sludge and fuel contaminants are kept in suspension and drained out with the oil at oil change periods. So clean up and keep clean with Sinclair TENOL—for diesels and other heavy-duty engines.



This Pilot Plant, part of the great Sinclair Research Laboratory at Harvey, Ill., provides space for six miniature operating replicas of commercial-sized refinery units. Continuous research explains the high quality of TENOL and other Sinclair Oils.



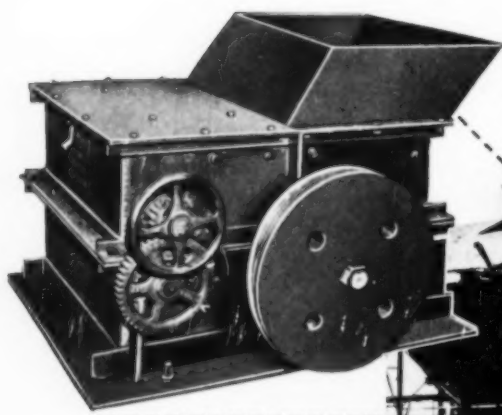
Making a study of crystal structure of catalysts, this Sinclair researcher at Harvey uses physical chemistry to develop refinery techniques in a never ending effort to bring industry better petroleum products at lower costs.

HEAVY DUTY LUBRICANTS

FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVE., NEW YORK 20, N. Y.

GET FLEXIBILITY of SIZING plus UNIFORM HIGH TONNAGE install

AMERICAN
Drop Cage
CRUSHERS



Adequate sizing flexibility was gained economically by the Perry Coal Company at its St. Ellen Mine near O'Fallon, Illinois, when an American Drop Cage Crusher was installed under its nut coal bin.



Rapidly fluctuating market needs is no problem to operators where flexible American Drop Cage Rolling Ring Crushers are on the job. They're designed especially for the secondary step in the full range of reduction to add flexibility to coal preparation.

EASY, ECONOMICAL TO INSTALL—Compact Americans are engineered to occupy the smallest possible space, right under the bin, with extremely low headroom requirements including bypass—assuring minimum installation costs without extensive preparation plant alterations.

HIGH TONNAGE — LOW OPERATING COST

—Doubly adjustable for flexibility of sizing to meet each day's market conditions, American Ring Crushers reduce coal through cleavage instead of blunt shattering force, giving a controlled ratio of fines—high tonnage output of uniform marketable sizes. And, by reducing at low, power-saving speeds, Americans offer additional savings in operating costs.

With capacities from 50 to 500 TPH, there's a type and size of American that's custom-built to make your coal marketing more flexible, more profitable.

Get the facts—send for Coal Crushing Bulletin.

American
*Originators and Manufacturers of
Ring Crushers and Pulverizers*

PULVERIZER COMPANY

1119 MACKLIND AVE.
ST. LOUIS 10, MO.



NEW STEELS

CUT DOWN SCREENING COSTS

Roebbling Abraso

Roebbling Roetemp

LONGER LIFE FOR AGGREGATE SCREENS

NOW ROEBBLING MAKES two types of steel wire that will save you plenty of screening dollars. They're called "Abraso" and "Roetemp", and they were developed expressly for aggregate screen service. "Abraso" is a special-analysis hard-drawn wire with high resistance to vibration fatigue. "Roetemp"

is an oil-tempered wire with top resistance to abrasion. Both wires are exceptionally hard and tough.

Abraso and Roetemp steel wires are woven into Roetcon, Roeflat and square mesh screens with $\frac{3}{4}$ inch space and larger. All these screens are made in Roebbling's Roeflat construction which

provides greater wearing surface, precision openings and comparative freedom from clogging. In smaller sizes, other constructions can be furnished.

We invite you to try screens woven from Abraso and Roetemp steel wire and to compare them with the screens you are now using. And take the first step towards screening economy today—write for Roebbling's Aggregate Screens Catalog, John A. Roebbling's Sons Company, Trenton 2, New Jersey.

WRITE OR CALL THE ROEBBLING FIELD MAN AT YOUR NEAREST
ROEBBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. • Boston, 51 Sleeper St. • Chicago, 5525 W. Roosevelt Rd. • Cleveland, 701 St. Clair Ave., N. E. • Denver, 1633 17th St. • Houston, 6216 Navigation Blvd. • Los Angeles, 216 S. Alameda St. • New York, 19 Rector St. • Philadelphia, 12 S. 12th St. • Pittsburgh, 855 W. North Ave. • Portland, Ore., 1012 N. W. 11th Ave. • San Francisco, 1740 17th St. • Seattle, 900 First Ave.

ROEBBLING

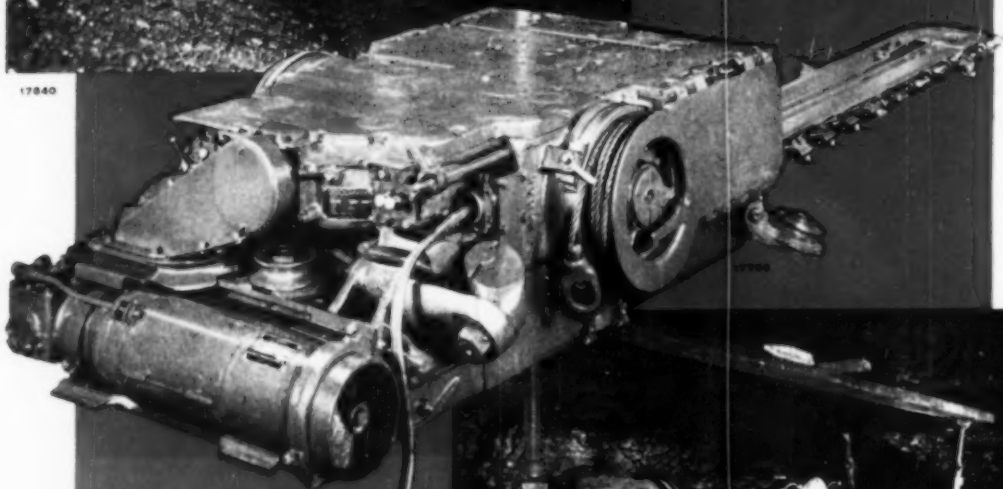
☆ A CENTURY OF CONFIDENCE ☆

YOU GET

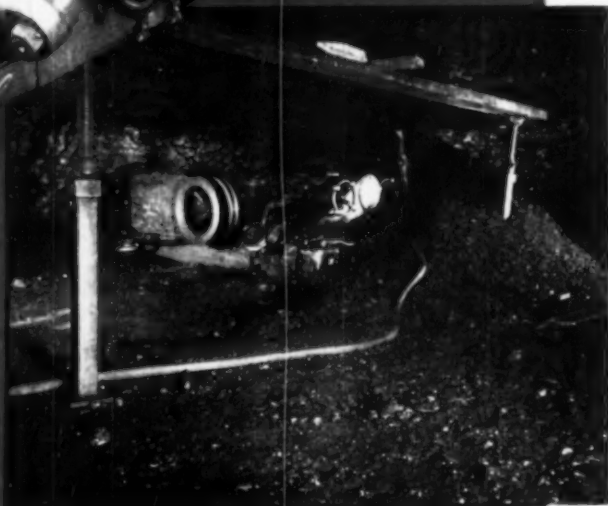


17840

The Goodman Bugduster piles the cuttings in a single row back from the face and convenient for loading. There is plenty of room for the drilling crew.



The Goodman Bugduster is standard equipment on all new 512 Shortwalls ... can be attached to any 512 in service not so equipped.



17842

ALL THESE ADVANTAGES *with the...*

GOODMAN TYPE 512 SHORTWALL

- Positive control of cuttings with bugduster unit; no hand shoveling, kerf is left clean, dust hazard reduced.
- Short length, compact size for work in close posting.
- Quick acting mechanical or hydraulic controls.
- Two feed drums each driven through high and low speed planetaries.
- Fast cutting even in hard conditions.
- Motor designed and built by Goodman for Shortwall duty.
- Tilting shoe for following irregularities in seam.
- Permissible electrical construction with tongue and groove hinged covers for electrical compartments.
- All load carrying bearings are anti-friction type. Splash lubricating system with all gears enclosed and running in oil assures thorough lubrication.
- Low maintenance cost, easy accessibility to all parts for inspection.
- Rugged construction throughout for continuous operation with mechanical loading routines.

GOODMAN
MANUFACTURING
COMPANY

HALSTED STREET AT 48TH • CHICAGO 9, ILLINOIS

In England: UNITED STEEL COMPANIES, LTD.

What it takes to stay heavyweight champ 17 years



1. Real heavy-duty truck reputation!

To haul lots of oil, you pick a he-man truck that's made for the job. You pick a truck with a record of performance that shouts "you can!" You pick an International Truck.

Registration figures show that for 17 straight years Internationals have led the heavy-duty truck field.



2. Real heavy-duty power!

On construction jobs you need a truck that can take a pounding... a truck with a powerful engine, a rugged frame, sturdy strength through and through.

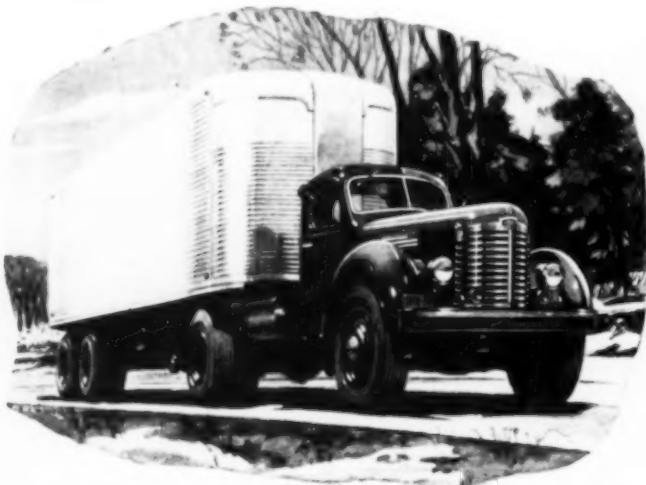
You find trucks like that at International Harvester... a builder of truck power for 42 years, a manufacturer who knows what tough trucks need.



3. Real heavy-duty truck engineering!

On big logging jobs you need size, brute strength and power... specialized by people who know your job in terms of trucks.

International heavy-duty trucks are big, tough, powerful... and specialized to handle the toughest hauling jobs. That's our engineering tradition.



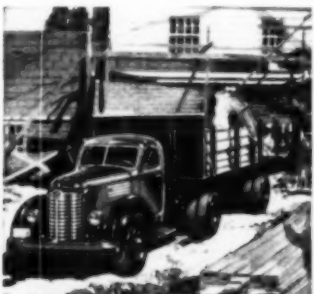
5. That's why International trucks are heavyweight champs for heavy-duty jobs—

For 17 straight years, International heavy-duty trucks have been America's first choice for heavy-duty work. Registration figures prove it. In trucks having gross weight ratings over 16,000 pounds, Internationals are so far ahead of the field that the heavyweight crown carries a Triple Diamond emblem.

Right now, International Dealers and Branches can give you quick delivery on

International heavy-duty trucks... specialized trucks, engineered and powered for your job.

Your nearest International Truck Dealer or Branch will be glad to send a qualified transportation engineer to analyze your hauling problem, to give you facts and figures on equipment to meet your specific needs, to answer any questions you may have. Call him soon.



4. Real heavy-duty truck stamina!

Hauling is a big job where you measure truck toughness by years of getting the work out and keeping the costs down on all hauling operations.

You can count on years of service from International heavy-duty trucks. The nation's largest exclusive truck service organization is set up to keep Internationals operating at peak efficiency, over the long haul.

Other International Harvester Products:
Farmall Tractors and Machines
Industrial Power... Refrigeration



Two in James Melton and "Harvest at Stars"
NBE, Sunday afternoons

INTERNATIONAL TRUCKS
INTERNATIONAL HARVESTER COMPANY • CHICAGO

P&H PROVIDES THE PROOF

P&H Model 1400
(4-yard) working at
The Sheep Rock Iron
Mines in Ontario,
Canada.



**-IN ONE
LOCATION
AFTER
ANOTHER**

The second P&H Electric
Shovel was on the job at
Sheep Rock within less than
a year.

Why are more and more large operators reordering P&H Electric Shovels? The reason is clear — lower operating costs. They've piled up the proof with Added Values like these:

1. **"Magnetorque" Drive**—hoists the dipper with electro-magnetic power — lowers with less than half the usual inertia to overcome. It's faster.
2. **"Magnetron" Control**—entirely eliminates control fingers and contactors. It's simpler, more dependable.
3. **Independent Propel**—eliminates sliding gears, brakes, clutches and their controls — provides faster move-up.
4. **Air-filtered cab**—pressurized to allow only clean, fresh air to enter — no dust to damage electrical equipment.

Yes, proof on the job makes P&H the choice of discriminating buyers — leads to one repeat order after another. Investigate before you invest.

* T.M. of the
Harnischfeger
Corporation for Electro-
Magnetic Type Clutch



ELECTRIC SHOVELS
4520 West National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGGER
CORPORATION
ELEVATORS • ELECTRIC DRUMS • HOISTERS • P&H • HOISTS • WELDING ELECTRODES • MOTORS

Every third P&H Electric Shovel sold is a repeat order

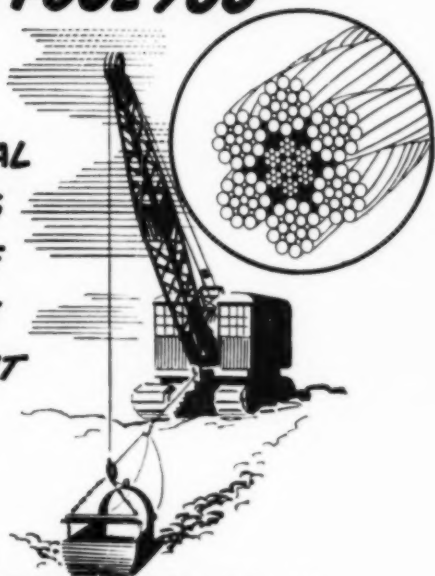
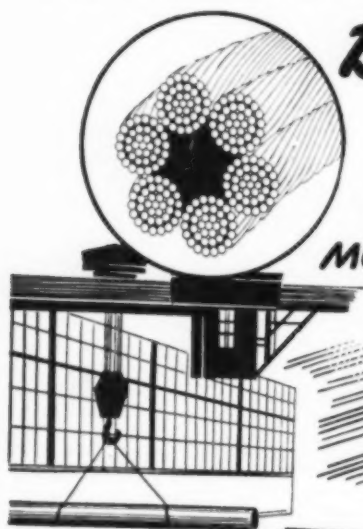
LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENT

SOME ROPES FOOL YOU

**U-W 6x16 FILLER WIRE IS IDEAL
FOR DRAG CABLES ON DRAG
LINE EXCAVATORS BECAUSE
IT IS SUFFICIENTLY FLEXIBLE
AND ABRASION RESISTANT**

BUT...

**FOR FACTORY CRANES A
MORE FLEXIBLE ROPE IS BETTER
WE RECOMMEND U-W 6x37
CONSTRUCTION FOR
THIS PURPOSE**



For longest and best service, always specify .

U-W LAYRITE (Preformed) IMPROVED PLOW STEEL

We invite you to let UPSON-WALTON engineer your tough rope jobs.

Copyright 1947—The Upson-Walton Company

THE UPSON-WALTON COMPANY

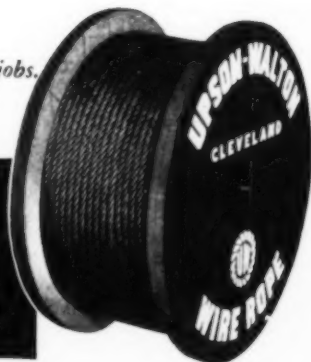
Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks, Brattice Cloth

Main Offices and Factory: Cleveland 13, Ohio

114 Broad Street
New York 4

737 W. Van Buren Street
Chicago 7

241 Oliver Building
Pittsburgh 22



Drive up and Drill

with the

New **CARDOX-HARDSOCC** SELF-PROPELLED HYDRAULIC DRILL

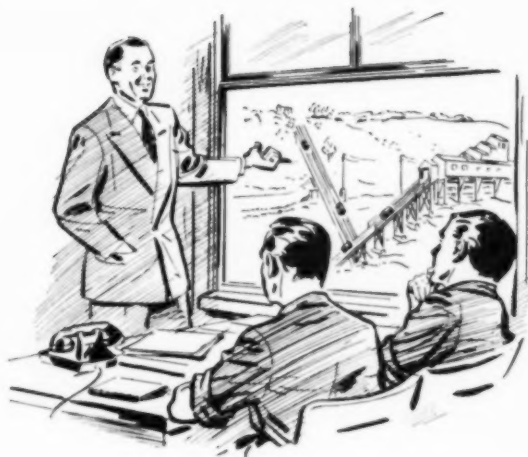


There's no time lost! A *self-propelled* Cardox-Hardsocg Hydraulic Horizontal Drill is always set up to operate. Roll it into position *under its own power*... and start drilling. You save time, labor and money. No truck is required to move this equipment from hole to hole. Its greater maneuverability means less time wasted between holes and more time actually spent in drilling.

You can increase footage up to 15% per day with a substantial gain in the number of holes drilled. You save, too, because it is no longer necessary to tie up a truck all day long to transport drilling equipment from hole to hole. This cuts your initial investment. For long hauls between jobs, the Cardox-Hardsocg Hydraulic Drill can be easily towed or transported by truck.

Write for complete information on this new, low-cost, high-production Cardox-Hardsocg Horizontal Drilling Unit.

HARDSOCC DIVISION of the
CARDOX CORPORATION • Bell Building, Chicago 3, Illinois



**this time . . .
we're letting others do our talking**

Frankly, we're up against a problem.

We want to tell you about Bethlehem wire rope—the kind we think is the best in the business. But we're afraid if we start talking "quality," you'll just excuse yourself and go away. Everybody talks quality, and sometimes it gets to be a bore.

Still, we'd like you to know what fine shaft and haulage ropes Bethlehem actually makes. They're really *big* sellers in the coal-mining country . . . so we're going to make a suggestion. Find the nearest user (it won't be hard) and ask him about his results with Bethlehem rope. We'll let him be our ad.

Sure, we could spend all day telling you ourselves. But the best advertising is the word-of-mouth kind from a satisfied customer. So, find the one closest to you—start him talking. Or better yet—happy thought!—order some Bethlehem rope and try it yourself. On a tough job, please.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by

Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation



**When you think WIRE ROPE
. . . think BETHLEHEM**



**For ENOCO
COAL COMPANY**

EFFICIENT **JOY** MACHINES

***INCREASE PRODUCTION
AND REDUCE COSTS***

**JOY CUTTERS, LOADERS and SHUTTLE CARS
always mean more tonnage at less cost
per ton . . .**

Write for Bulletins, or

*Consult a Joy
Engineer*

WADCL 2408



The Enoco Coal Company uses to advantage the JOY Equipment illustrated on this page—11-BU Loaders, the new 10-SC Shuttle Car, and 10-RU Universal Cutters—all ruggedly-built, heavy-duty, high-capacity machines.

Licensed under the Patent to E. C. Morgan, No. 1,891,305

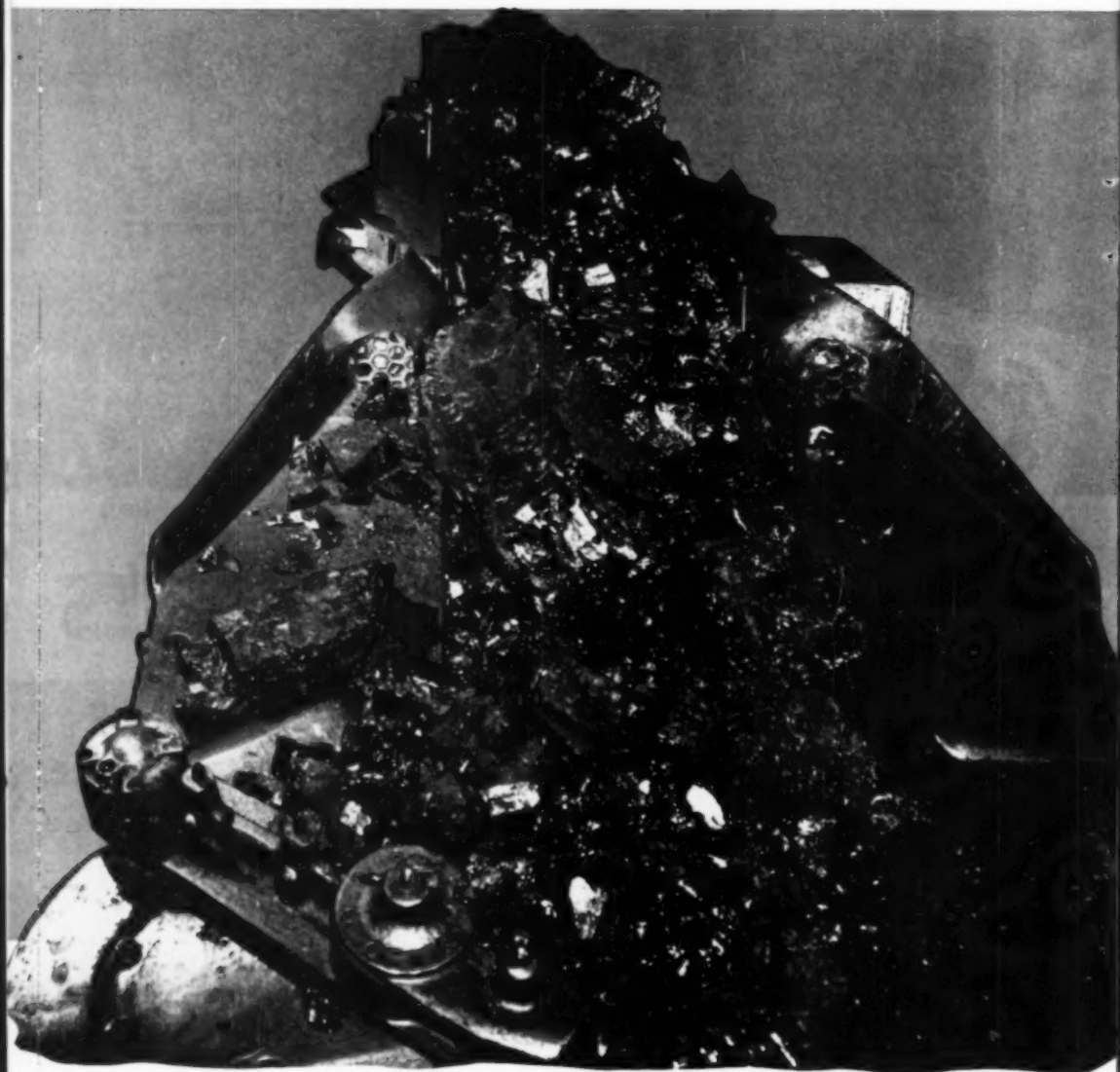


JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

How to boost the output



STANDARD OIL COMPANY (INDIANA)

of your loaders . . .

Superla Mine Lubricants

You can avoid costly delays and interruptions in machine production by switching to the new Superla Mine Lubricants. The qualities given to these lubricants help boost loader production 4 ways.

Reduce downtime for maintenance.

Superla Mine Lubricants resist heat and thus minimize deterioration of the lubricant and the formation of carbon. Cleaner and more protective lubrication of loader transmissions prevents wear, reduces downtime for maintenance.

Eliminate warm-up time. Superla Mine Lubricants are fluid at low temperatures. When machines start, controls operate freely and without drag. Loading operations can be started immediately.

Permit faster loading. Superla Mine Lubricants keep clutch plates clean and permit smooth operation of controls. This allows easier handling of machines, results in faster loading.

Shorten servicing time. Superla Mine Lubricants (except the two heaviest grades, which are used only for special loader conditions), pour

readily from bung-type barrels. They also handle easily in all types of dispensing equipment. No time is wasted when the lubricant is applied.

More and more midwest mines are profiting through the time and cost savings provided by Superla Mine Lubricants. A Standard Oil Lubrication Engineer will be glad to tell you about many actual performance records. Use his evidence as the basis for a trial of Superla Mine Lubricants in your equipment. Grades are available for both oil- and grease-lubricated loaders.

Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.



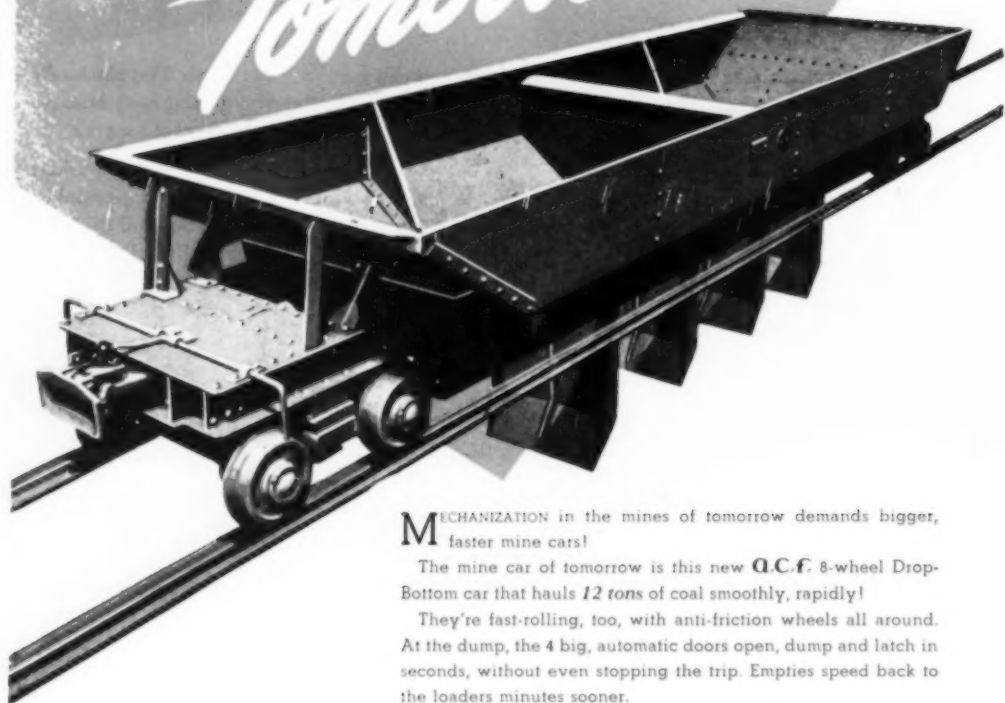
Send for this booklet. The booklet illustrated at the right describes how the new and improved Superla Mine Lubricants meet your specific requirements for mine-machine lubrication. A copy will be sent at your request.

STANDARD OIL COMPANY (INDIANA)



**DEVELOPED
FOR MINES
OF**

Tomorrow!



Mechanization in the mines of tomorrow demands bigger, faster mine cars!

The mine car of tomorrow is this new **A.C.F.** 8-wheel Drop-Bottom car that hauls **12 tons** of coal smoothly, rapidly!

They're fast-rolling, too, with anti-friction wheels all around. At the dump, the 4 big, automatic doors open, dump and latch in seconds, without even stopping the trip. Empties speed back to the loaders minutes sooner.

These cars made for future streamlined operations may be able to solve your coal-hauling problems **now**. Ask your **A.C.F.** Sales Representative to explain their many features to you.

American Car and Foundry Company, New York • Chicago
Cleveland • Washington • Philadelphia • Huntington, W. Va.
Berwick, Pa. • Pittsburgh • San Francisco

a.c.f.

MINE CARS

for Greater Coal Output

ALLIS-CHALMERS ANNOUNCES

New Car Shaker



**FOR FAST UNLOADING
OF DROP-BOTTOM
GONDOLA CARS**

COSTLY MAN-HOURS are saved and casualties eliminated with use of the A-C Car Shaker in unloading of coal, cinders, ore, slag, coke, gravel and other granular materials from drop-bottom gondola cars.

Handled by a crane or hoist, the Car Shaker is placed on the top flanges of the car. When the motor is started, the vibratory motion of the shaker is transmitted to the car and loosens the material so it flows from the hopper openings.

Weighing approximately five tons, the all-welded unit is 11 ft long, 5 ft wide and 4 ft 4 in. high.

The shaker is furnished as a "packaged" unit with Allis-Chalmers motor, *Texrope* V-belt drive and separate starter.

For complete information on how this new Car Shaker can help *you* save time and money, contact your nearby A-C district office. Or send in the handy coupon below.

SIX FEATURES OF A-C CAR SHAKER

1. Motor is located inside body; drive completely covered by guard.
2. Size of body and shoes designed to fit all gondola cars.
3. Simplified mechanism reduces number of working parts.
4. Hydraulic arrangement for bearing removal.
5. Car Shaker heavily designed — Stress Relieved after welding and before machining.
6. Shaker is well balanced for ease in handling.

Texrope is an Allis-Chalmers trademark.

ALLIS-CHALMERS



ALLIS-CHALMERS, 968A SO. 70 ST.
MILWAUKEE, WIS.

Please send Bulletin describing A-C Car Shaker.

Name

Address

Firm

A-2078



Unified Engineering pays off
in *Record-Breaking Days*

M'NALLY & PITTSBURG
MANUFACTURERS OF EQUIPMENT TO MAKE COAL A BETTER FUEL

● The perfect synchronizing of preparation equipment, built under unified engineering, shows up in huge tonnage on the scratchboard.

In the loading control booth above is one plant's daily record: 104 carloads of coal (50 tons per car) washed to a predetermined ash, dried to a definite moisture. A carload of specification fuel every 4½ minutes!

Installation of McNally-built preparation equipment inevitably brings a jump in tonnage, satisfying to management and men. Upgrades 25 tph to over a thousand, and at a preparation cost of only a few cents a ton.

Nothing is left to chance; preparation is completely automatic. At the touch of a button, washers separate coal from refuse and control ash content to predetermined limits. Automatic dryers squeeze out free moisture. Push-button control also moves coal cars into loading position, fills them to capacity.

If you wish to experience record-breaking days like these, we invite you to contact our technical staff . . . or better still, call at our Booth A-301, Mining Congress Show in Cleveland, Ohio. They will be glad to analyze your raw coal and suggest ways that McNally precision equipment can be of service to you.

McNally Pittsburg Manufacturing Corporation—Manufacturing Plants: | Pittsburg, Kansas
| Wellston, Ohio

Engineering & Sales Offices: Pittsburg, Kan. • Chicago (1), Ill. • Pittsburgh (22), Penna. • Wellston, Ohio • Caixa Postal 1310, Rio de Janeiro, Brazil

"A Coal Preparation Plant
Is No Better Than The Sum Total
Of Its Parts"

Unified Engineering

**SAVES TIME AND EARNS MONEY
for Economy-Minded Executives**

Unified Engineering starts with washery buildings which are architecturally individual and functionally efficient.

Unified Engineering flows inside to each piece of equipment which is constructed to rigid standards.

To economy-minded men . . . and to you, too, . . . Unified Engineering means precision equipment from one reliable source, timesaving service when repairs and replacements are necessary, and a plant which can be counted upon to operate at a profit year after year.

Preparation plant and equipment for Margon Mines, Inc., Harris Junction, Illinois, visual evidence of McNally Unified Engineering.

M'NALLY  PITTSBURG

MANUFACTURERS OF EQUIPMENT TO MAKE COAL A BETTER FUEL

McNally Pittsburg Manufacturing Corporation—Manufacturing Plants: Pittsburg, Kansas
Wellston, Ohio

Engineering & Sales Offices: Pittsburg, Kan. • Chicago (1), Ill. • Pittsburgh (22), Penna. • Wellston, Ohio • Caixa Postal 1310, Rio de Janeiro, Brazil



New Savings with

PREFORMED WIRE ROPE

For the few who haven't used it—but who will —Preformed wire rope promises the same kind of savings in time and money that regular users have enjoyed since 1934.

Preformed lasts longer, thus costs less to use. It saves time and money in installation and operation. It is safer to use and reduces safety costs.

So, for new savings, see your wire rope manufacturer or supplier about Preformed wire rope.

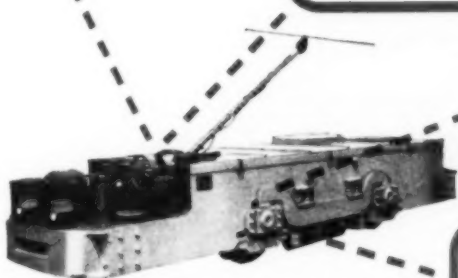
CONVENIENTLY LOCATED air brake valve controls application of air to two equalized brake cylinders. A motor-driven compressor maintains pressure in the reservoirs.



FOR EMERGENCY APPLICATION, and to hold locomotive at rest, standard G-E handbrakes are built to last. Above, precision-built brake rigging and hand-wheel.



YOU GET SMOOTH CONTROL of train speed by dynamic braking. Operator fatigue is also reduced. Above, a G-E Traction D-c motor, heart of the dynamic braking system.



on G-E trolley-type locomotives

4 WAY BRAKING SAFETY

Air brakes
Hand brakes
Dynamic brakes
Magnetic track brakes



AN ADDITIONAL SAFETY FEATURE is provided by the supplemental magnetic track brakes which give sure, positive "grip" on tracks for final braking.

To minimize chances of accident, personnel injury and equipment damage, and to lessen chances of production slowdowns, a four-way braking system is now offered on General Electric trolley-type mine locomotives—a system that operates regardless of main power failure or off-wire trolleys. Besides standard mechanical hand brakes, this system includes air brakes, plus easy-to-handle dynamic brakes, and magnetic type track brakes. A 32-volt battery, which is automatically maintained by a motor-generator set with voltage regulator, can energize either the dynamic or magnetic braking system, independent of trolley power. A G-E specialist in mine locomotives will be glad to give you complete information. Call your local G-E office today! *Apparatus Department, General Electric Company, Schenectady, New York.*

FOR SAFER SERVICE—G-E MINE LOCOMOTIVES

GENERAL  ELECTRIC

2 mining companies



Three Point Coal Co.

"HOGS" OUT 45' ROCK HIGH-WALL WITH "C" TOURNADOZER

To get at coal seam close to edge of mountainside, Three Point Coal Company is stripping off a 45-foot cliff face, near Three Point, Kentucky. Overburden is 90% rock . . . blasted, then dozed off the ledge.

Doubles Crawler Output

It's rough going all the way, from initial stripping to cleaning coal seam. Fastest dozer on the job is Three Point's rubber-tired "C" Tournadozer . . . "does about twice the work of a crawler on my straight dozing," reports H. F. Rhodes, mine superintendent. Tournadozer makes faster cycles on the short 0-to-200' one-way push, because there's no time lost for shifting gears . . . no foot clutching.

Handles Extra Assignments Fast

Tournadozer's speed pays off on extra assignments for Three Point Coal Co., too. They used it to build mine access roads up the mountain . . . and frequently drive it some 12 miles over state highway to Harlan, Kentucky, to handle extra construction work. To get to the "outside" Tournadozer has to travel through a railroad tunnel, the only access to and from the mine. But Tournadozer got in and out of the tunnel fast . . . no planking necessary . . . travels 15 m.p.h. under its own power over highway . . . no waiting for flat-bed or trailer.



Dozing heavy "shot" rock in Three Point, Ky. mine, Tournadozer's 4-wheel drive on giant 31.00 x 25, low-pressure tires, and 180 h.p. Diesel, put plenty of power and traction behind its extra-large blade.

GET MORE WORK DONE *by dozing on rubber...*

Sunnyhill Coal Co.

SERVICES 7 PITS IN 8 HOURS WITH "C" **TOURNADOZER**

Busiest rig around Sunnyhill Coal Company's mine at New Lexington, Ohio, is their 15 m.p.h., rubber-tired "C" Tournadozer. "In an 8-hour shift, we clean around shovels in 7 pits, scattered over a 3-mile area," reports Paul Beal, one of the Tournadozer operators. "It used to take 4 or 5 dozers to do this work. It really gets around... went 8 miles in 26 minutes... did the job and got right back. Would have taken a crawler a whole shift, and we would have had to use a low-boy to get it there."

Handles Emergency Switching

"Last winter, when 4 coal cars got derailed, I used the 'C' dozer to push them off and clear the track... also spotted cars with it when our dinky broke down. It's the best thing I've seen for crossing tracks

... crosses any place without ties." Sunnyhill's Tournadozer also strips overburden, cleans coal seam, builds roads, push-loads scrapers on its 24-hour-a-day schedule.

Tournadozer's ability to get more work done has won enthusiastic approval of scores of mine owners and operators. With its 180 h.p. 4-wheel drive... 15 m.p.h. speed, forward and reverse... instantaneous speed selection... and giant, low-pressure tires... you've got "dozer dynamite on wheels." Send for complete facts... or see your LeTourneau Distributor TODAY.

To: R. G. LeTOURNEAU, INC., Peoria, Ill.

Send following facts on 180 h.p. "C" Tournadozer:

☐ Specifications ☐ Price ☐ Delivery

Name _____ Title _____

Company _____

Street _____

City _____ State _____

Type work to be handled _____

Also send information on: ☐ Big 300 H.P. "E" **TOURNADOZER**
☐ 30-Yd. ☐ 13.3-Yd. ☐ 7-Yd. **TOURNAPULLS**

C10

LETOURNEAU
PEORIA, ILLINOIS



TOURNADOZERS

IT'S RUBBER THAT PUTS THE ACTION IN TRACTION

Tonic

TO YOUR HAULAGE SYSTEM

Ever watch one of your crews putting in some Bethlehem prefabricated track?

If you have, you know how smoothly the job progresses. You know that many of the parts can be handled by one man alone. You know that the elements fit together quickly; that the work sails along without confusion.

One reason is the basic simplicity of a Bethlehem prefabricated layout—the relatively few parts, the numbered rails, the easily-installed turnouts. There's no large and puzzling variety of rail lengths. Everything, down to the last steel tie, has been designed for rapid installation.

This is all the result of some very careful planning . . . which includes, first of all, a preliminary study of your mine by a Bethlehem engineer. You, of course, have the



final say on his recommendations. You must be fully satisfied before a rail is cut or curved in our shops.

Once installed, the track is a genuine tonic to your haulage system. Speeds things up; reduces maintenance; cuts derailments. Check us on all these points: in a little while, you'll be telling us how good it is.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM PREFABRICATED TRACK

★

★

SIMPLEX WIRE & CABLE CO

MANUFACTURERS

79 SIDNEY ST., CAMBRIDGE 39, MASS.

It appears from the advance notices

that the Coal Show in Cleveland, May 9 to 12 inclusive, is going to be a real record-buster. We hope you will come and help to make it one of the most successful Coal Shows ever held. There are a number of features from which you will get considerable benefit.

Of course, papers will be read during the meetings. Among these will be an important paper by our Chief Engineer, Mr. E. W. Davis. His subject will be "Electric Cables for Mining Service". Mr. Davis is an authority on this subject and you may be sure that his paper will be very much worthwhile. As soon as Mr. Davis' paper has been read we will have copies of it for distribution at the Simplex booth, No. 316, in the Arcade.

Another feature of interest will be the exhibits. We like to think that our Simplex booth will be one of the most interesting. At this booth we shall display all of the latest Simplex Wires and Cables used in the mining industry. In addition, we expect to have a new coal mine catalog that describes all the wires and cables that you will be wanting to use.

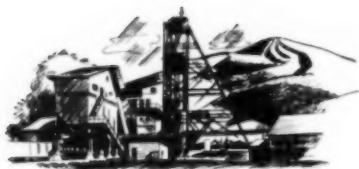
And certainly not the least of the benefits from attending the Show will be greeting old friends and making new ones. Frequently the exchanging of experiences can give you a new slant on a troublesome problem.

Why don't you plan now to set aside those days - May 9 to 12 inclusive - to learn what new materials and machinery are available to help you in your job, and also to listen to the expert discussion of mining problems? You will be well rewarded.

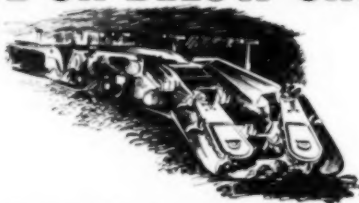
May we suggest that you plan to make the Simplex booth - No. 316 - your headquarters for meeting your friends?

Cordially yours,

Simplex Wire & Cable Co.

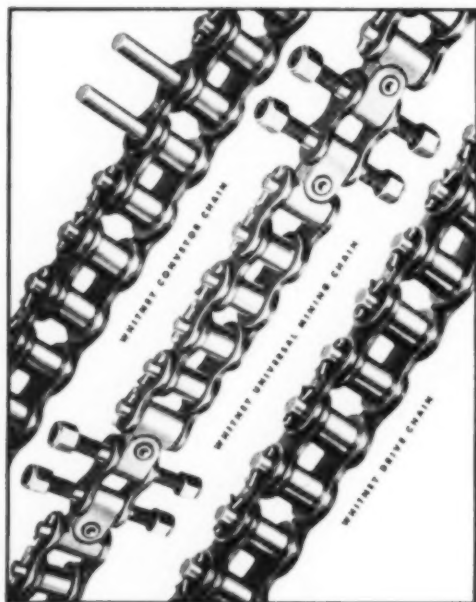


ABOVE OR BELOW GROUND



WHITNEY CHAIN DRIVES

are tonnage producers



Whitney chain . . . loader, conveyor or drive . . . is one investment that will pay out daily profits.

Made of selected heat-treated alloy steel, these tough, rugged chains keep equipment producing on schedule. They stand up under the severest of operating conditions . . . resisting shock loads without breakage. Whitney Chain Drives help give you lowest cost-per-ton production wherever they are used . . . in the preparation plant or up-at-the-face.

Accurately designed Whitney Cut Tooth Sprockets complete the combination for overall drive efficiency. Like Whitney Chains they are made to insure smooth operation and give long wearing life.

Standardize on Whitney Chains and Cut Tooth Sprockets . . . the all-steel drives . . . and you'll get greater output and less down time.

THE WHITNEY CHAIN & MFG. COMPANY

Division of Whitney-Hanson Industries, Inc.

210 Hamilton St., HARTFORD 2, CONNECTICUT

Invitation

TO AN EXHIBIT

PACKED WITH ACTION

Mack has assembled an action-packed exhibit that will be of interest to every visitor at the Coal Show.



SEE THE BIG, NEW MACK
TRACTOR-TRAILER COAL HAULER!



INSPECT MACK'S HUGE 30-TON
SIX-WHEELED CHASSIS!



SEE THE FAMOUS MACK BALANCED BOGIE IN ACTION!
Biggest four-wheel driven truck bogie
in standard production.



SEE THE EXCLUSIVE MACK POWER DIVIDER IN ACTION!
The unique device that assures positive traction over
rough terrain and through slippery mud or sand.



SEE THE MACK DUPLEX TRANSMISSION IN ACTION!
Largest transmission ever produced for motor trucks . . .
all parts exposed so that its operation may be observed at all speeds.

Mack representatives and engineers will be on hand
to greet you. They'll gladly answer any questions you
may have. Drop in and see us. We're sure you'll
find it interesting and well worth your while.



Mack

TRUCKS

AT THE

COAL SHOW

(SPACE 598)

CLEVELAND
MAY 9-12th

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Limited.

**We're In A
Jam... So We're
Calling on You**



DUPLIX BIT

CINCINNATI DUPLIX CHAIN

**YES! AND YOU CAN BE SURE
WE'LL TAKE CARE OF YOU**

Most everyone at some time or other finds himself in a Jam. We're in business to **SERVE YOU** to the best of our ability, so do not hesitate to call on us or any one of our representatives if you have a particular cutting problem. Designing and manufacturing **BETTER COAL CUTTING EQUIPMENT** for over 25 years is a specialty with the Cincinnati Mine Machinery Company, and making that equipment best fit your requirements is our business. If at any time you have a problem . . . call us . . . we're only too glad to be of assistance.

CINCINNATI REPRESENTATIVES AT YOUR SERVICE

These men are familiar with coal cutting production problems . . . they know what Cincinnati Coal Cutting Equipment can do to help you work out your particular problem.

Frank Armstrong, Kenilworth, Utah
J. R. Carlidge, Cincinnati, Ohio
W. M. Hales Company, Chicago 28, Illinois
Danville, Ill., Benton, Ill., Hillsboro, Ill.
West Frankfort, Ill., Greenville, Ky., Madisonville, Ky.
The Huntington Supply & Equipment Co., Huntington, W. Va.
F. G. Licence (Pty) Ltd., Durban, South Africa
Lyons Machinery Company, Little Rock, Ark.
McComb Supply Company, Marian, Ky., Jellico, Tenn.
Penn Machine Company, Johnstown, Pa.
Penn Machine Company, Pittsburgh, Pa.
E. S. Stephenson & Co., Ltd., St. John, N. B., Canada.
Hollister, N. S., Canada
J. T. Sudduth & Co., Birmingham, Alabama
Antonio Escobar Williams, Santiago, Chile, South America

THE CINCINNATI MINE MACHINERY CO.

2983 SPRING GROVE AVENUE • CINCINNATI, OHIO



Genuine

PITTSBURGH

ARMORED GEARS



**JUST THE RIGHT HARDNESS IN JUST
THE RIGHT PLACES, PLUS A TOUGH,
SHOCK-RESISTANT CORE!**

**GUARANTEED TO EQUAL OR OUTLAST
ANY OTHER HEAT TREATED GEARS**

That's right . . . the Pittsburgh ARMORED GEAR Line is guaranteed to last as long or longer than any other heat treated gears made today. Further, we guarantee ARMORED GEARS to have an average service life 1 to 1½ times that of any oil treated gear . . . and to outlast untreated gears 5 times, although many service records show they last 10 to 15 times longer. And that's a fact!

For lower maintenance costs and increased output per gear-dollar spent, standardize on Guaranteed Pittsburgh ARMORED GEARS for your replacements. Most shipments made from ready stocks.

**SEE THE PITTSBURGH GEAR
DISTRIBUTOR NEAR YOU**



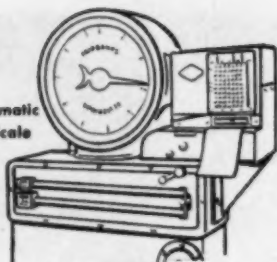
**PITTSBURGH GEAR
COMPANY** | 27th & Smallman Streets
PITTSBURGH 22, PA.

GEARS AND PARTS FOR LOADERS, CUTTERS, LOCOMOTIVES

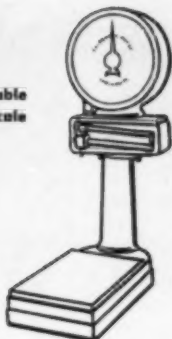
Bench
Scale



Printomatic
Dial Scale



Portable
Dial Scale



The easy WAY to *WEIGH* FAIRBANKS-MORSE Scales

Fast, accurate, easy-to-read, easy-to-handle Fairbanks-Morse Scales offer the easy way to "weigh." Because these lastingly accurate weighing instruments are designed for fast, dependable operation . . . for maximum ease of reading, they speed weighing operations . . . minimize the chance of costly human error.

There is a Fairbanks-Morse Scale for every weighing operation. Your Fairbanks-Morse weighing expert will be glad to assist you in selecting the right style and size for your operations. Fairbanks, Morse & Co., Chicago 5, Ill.

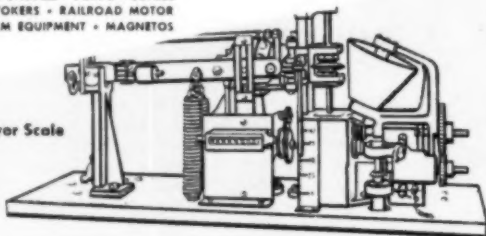


FAIRBANKS-MORSE

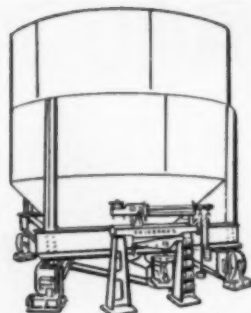
A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES
MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR
CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

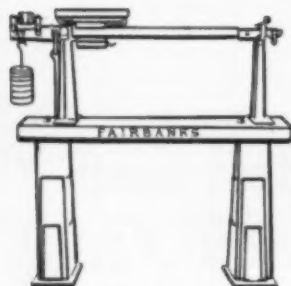
Belt Conveyor Scale



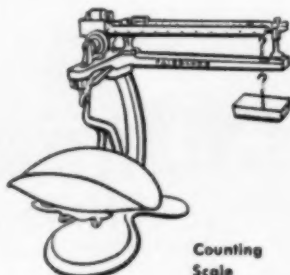
Weigh Con
Scale



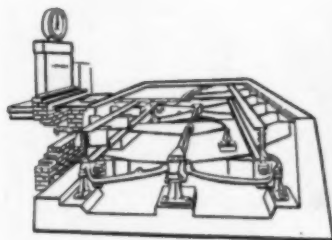
Hopper Scale



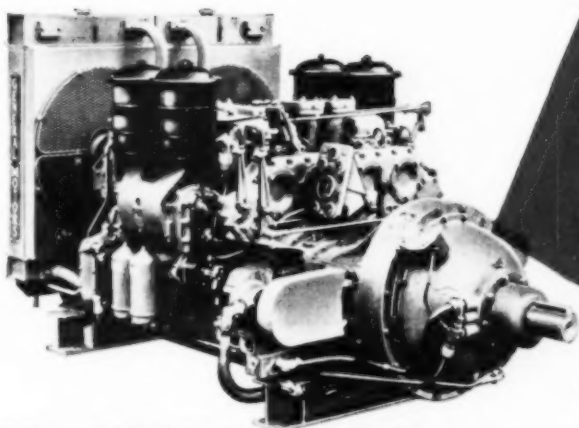
Full Capacity Beam



Counting
Scale



Truck Scale



**A Combination
Torque Converter
and Fluid Coupling
Integral with the Engine**

The NEW General Motors

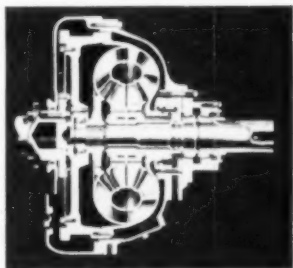
DIESEL ENGINE-TORQUE CONVERTER UNIT

HERE is a complete, integrated Diesel engine-torque converter unit that combines the inherent efficiency of the GM 2-cycle Diesel engine with the features and advantages of both torque converter and fluid coupling. It provides torque multiplication up to 4 to 1 for starting variable heavy loads. It also provides highly efficient transmission of power during light load periods by automatically shifting to fluid coupling in the upper speed range.

A smooth, uninterrupted flow of power, delivered through a liquid, prevents engine stalling under any load and protects both engine and driven machinery from sudden shocks.

One Manufacturer—One Responsibility

Up to now most engines and hydraulic drives have been separate units. The result—compromise designs and divided responsibility. Now General Motors



In the new GM Torque Converter, oil does the work. Automatic transition from torque multiplication of 4:1 at stall to 1:1 in upper speed range.

offers a new torque converter specifically designed and manufactured as an integral part of the General Motors Series 71 Diesel engine. It is a self-contained unit built by one manufacturer providing a long needed saving in space and weight as well as certain desirable operating characteristics not available before.

This new power unit will get the most work done in the least time because the engine operates in its most efficient speed range at all times—delivering maximum engine horsepower regardless of the speed of the load. Maximum torque to

start heavy loads **PLUS** maximum horsepower to keep the load moving.

Everyone with a hard job to do in the oil fields, in construction, in mining or in logging should have all the facts about this compact, flexible GM Diesel Engine Torque Converter unit. Write today for a complete description.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES... up to 200 H.P.

DETROIT 20, MICHIGAN

MULTIPLE UNITS... up to 800 H.P.

GENERAL MOTORS

DIESEL BRAVN WITHOUT THE BULK

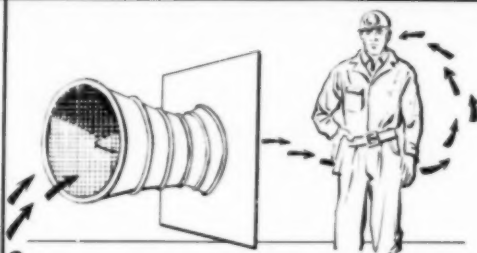


Coal Facts #2.

...A ONE MINUTE QUIZ ...FOR
MEN IN THE COAL INDUSTRY



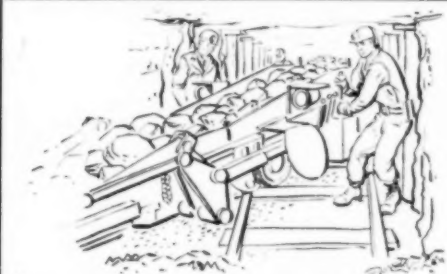
1. What is the largest single cause of coal mine accidents? ☐ Explosives ☐ Falls of roof and coal ☐ Dust and gas explosions



2. What is considered a safe volume of underground air per man, per minute? ☐ 175 cu. ft. ☐ 500 cu. ft. ☐ 58 cu. ft.



3. Many major steps are being taken to make mines safer. Can you name 5?



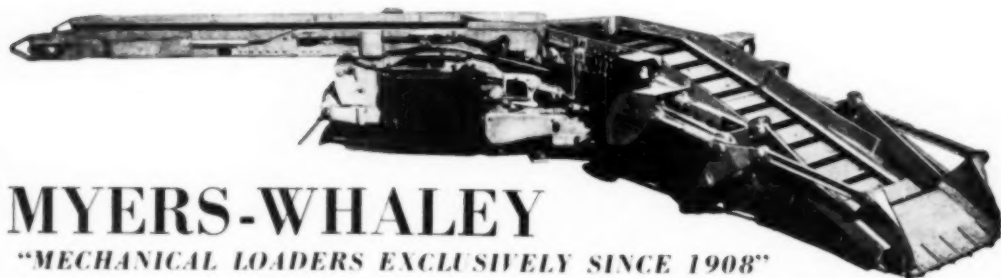
4. What loading machine is always safe for operation in narrow places?

Answers:

1. The U. S. Bureau of mines lists the causes of accidents in order of fatalities as follows: 1. Falls of roof and coal; 2. Explosions from gas and dust; 3. Explosives, machinery, electricity and other causes.
2. Individual state requirements vary between 150 and 200 cu. ft. per minute per man for an average of approximately 175 cu. ft. Many mines provide more than this, and all mines provide more where noxious and dangerous gasses exist.
3. Seven important steps now being taken by many mines include: Instruction Courses, Inspection, Use of permissible explosives, use of government approved per-

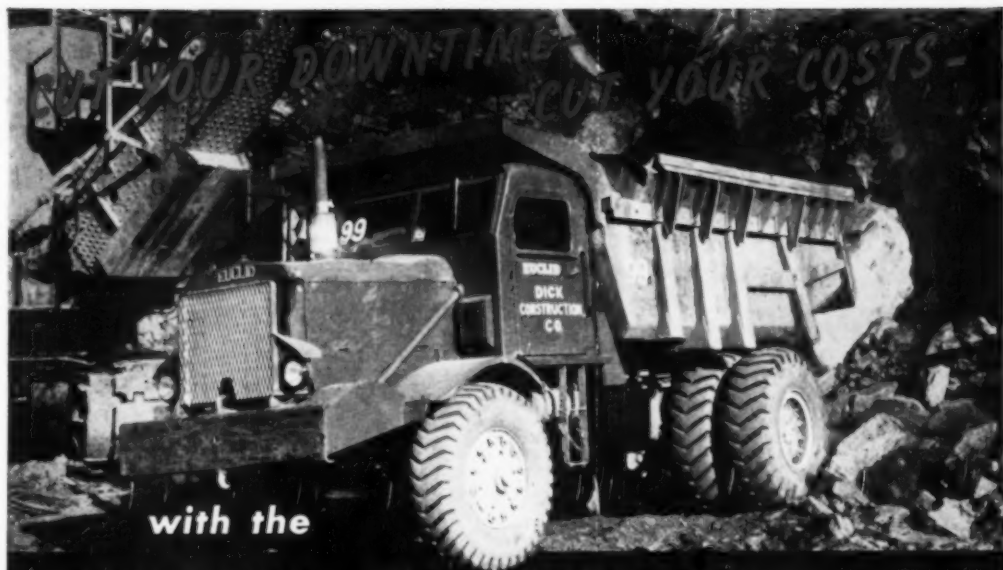
missible motors and control equipment on machines at the face, Regulations against inflammable articles, Safety crews, Rock Dusting and Spraying and, Use of safety equipment for miners such as safety shoes, helmets, goggles, lamps and better lighting.

4. Because of its vertical lift shovel action with all power being directed in a vertical plane, the Whaley "Automat" is always safe, even in narrow places. The "Automat" can't side kick, knock out timbers, cause falls or crush men. Not only is the "Automat" always safe but it also is a machine that gives you big capacity regardless of the material loaded. This means that it is able to clean up falls, do entry work or load coal and do any job in its stride. Investigate the Whaley "Automat" for efficient loading at the lowest power requirement of any loader of equal capacity. Myers-Whaley, Knoxville 6, Tenn.



MYERS-WHALEY

"MECHANICAL LOADERS EXCLUSIVELY SINCE 1908"



with the

TOUGHEST TIRE EVER BUILT...

THE
Firestone
ROCK GRIP

DOWNTIME is a profit killer. To cut costs you've got to have a tire that is tough enough and strong enough to stand up on the job day in and day out without time loss. Firestone tires do that.

There's a Firestone tire for every off-the-highway job. There's the strong, rugged Rock Grip with a tough, massive tread for rock work, strip mining—for every job where punishment is severe. There's the Ground Grip with long, strong traction bars for earth biting power and maximum traction. There's the Earth Mover for free rolling wheels where maximum flotation and carrying capacity are required.

Firestone Off-the-Highway tires and Firestone service are cutting costs for contractors everywhere. They will cut your costs too. A trial on your equipment will prove it.

Listen to the Voice of Firestone every Monday evening over NBC and Americana over NBC Network Television Stations

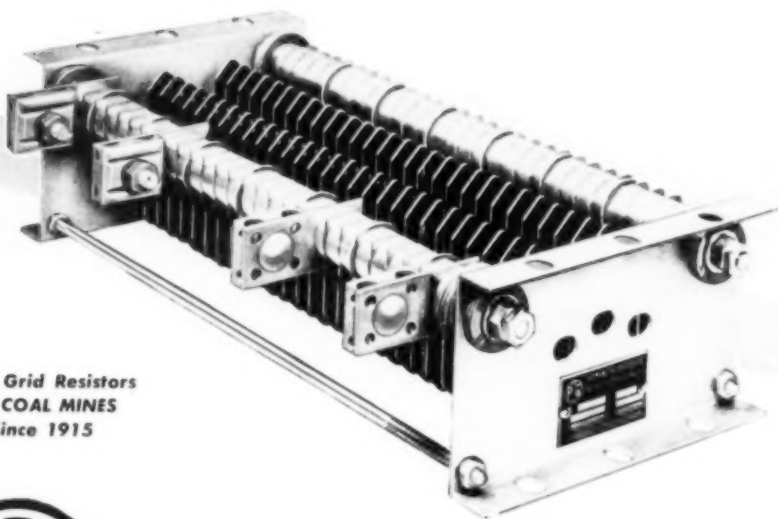
Copyright, 1949, The Firestone Tire & Rubber Co.



Firestone
OFF-THE-HIGHWAY TIRES

Dependable **RESISTOR** *Performance*

P-G Steel Grid Resistors are basically dependable because of steel and mica—non-breakable raw materials. With P-G unique grid design, plus sound resistance values and conservative capacities, resistor troubles are minimized. Specify these dependable resistors for your next application.



Steel Grid Resistors
for COAL MINES
Since 1915



The Nonbreakable Steel Grid Resistor

THE POST-GLOVER ELECTRIC COMPANY

• ESTABLISHED 1892 •

221 WEST THIRD STREET, CINCINNATI 2, OHIO

THE TIGER BRAND SPECIALIST SAYS—



**"Here's one case
where wire rope care
paid off big!"**

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar."

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope."

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage—even for half a day—would cost them real 'dough'."



How proper wire rope application saves you money

There is always one best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA STEEL COMPANY, SAN FRANCISCO

TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

**AMERICAN TIGER BRAND
WIRE ROPE**



Excellay Preformed



UNITED STATES STEEL

SEND FOR NEW FREE BOOKLET

American Steel & Wire Company
Rocketteller Building, Dept. J-4
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

Address.....

City..... State.....



WHERE THE GOING IS *Really TOUGH!*

The PROBLEM — How to move a mountain of rock quickly and at low cost with a minimum of maintenance shutdowns.

The SOLUTION — A MARION 151-M, 6 cubic yard shovel, designed for continuous service in rock.

Don't miss MARION'S exhibit at 1949 Coal Convention in Cleveland, May 9-12, booths 103 and 302.

The
**MARION
151-M**

*is the shovel
FOR YOU!*



Send today for Bulletin 393 giving the complete story of the MARION 151-M.



EATON

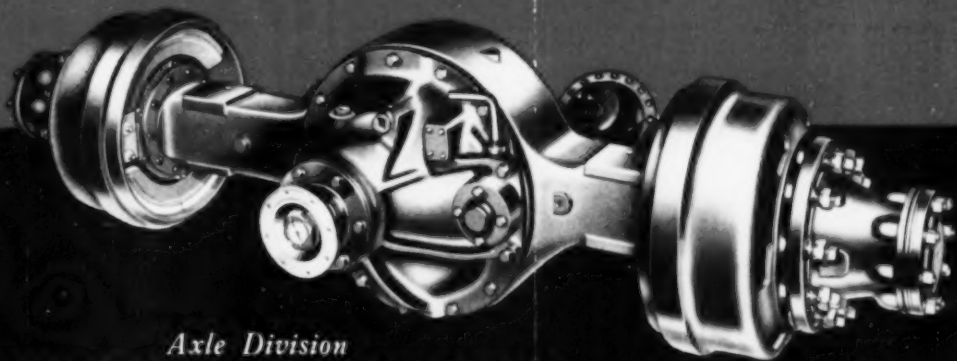
2-Speed Truck

AXLES

Allow Engines to Run at most Efficient Operating Speeds

Pulling out under full load, making time on the hills, or high-balling on the straight-away—there is an operating speed range that's best for your engine—best for performance, for operating economy, and for engine life. Eaton 2-Speed Axles permit engines to run in this top-efficiency range under all conditions of road and load. This results in lower operating and maintenance costs, and longer life for the entire vehicle. Eaton 2-Speed Axles are available for most trucks of the 1½ ton class and larger. See your truck dealer for complete information.

*More Than a Million
Eaton 2-Speed Axles
in Trucks Today*

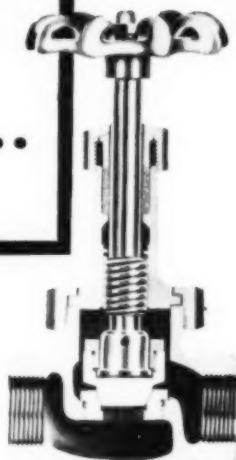


Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

OTHER  PRODUCTS

SODIUM COOLED VALVES • POPPET VALVES • FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • PERMANENT MOLD GRAY IRON CASTINGS • ROTOR PUMPS
SPRING LOCK WASHERS • SNAP RINGS • COLD DRAWN WIRE • HEATER-DEFROSTER UNITS • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, AND DYNAMOMETERS

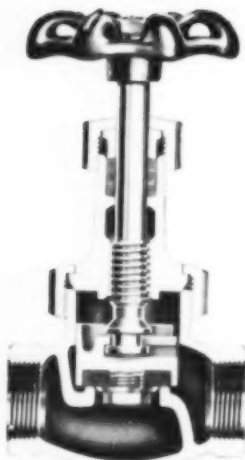
Walworth bronze valves...



Walworth No. 225P Globe Valve
500 Brinell Seat and Disc



Walworth
No. 29 Gate Valve



Walworth No. 95 Globe Valve
Re-New Disc

**built to give
dependable trouble-free service
on all recommended jobs**

Walworth No. 95 Bronze Globe Valves (Angle Type; No. 96) are recommended for service where throttling is not required. They are rated at 150 psi working steam pressure, 500F; 300 psi cold water, oil or gas. The improved renewable disc and lock-on, slip-off disc holder — an original Walworth development — saves time and trouble. This valve can be repacked under pressure when fully opened. All parts are designed to give maximum service and strength.

Walworth No. 29 Bronze Gate Valves are rated at 200 psi working steam pressure, 550F; 400 psi cold water, oil and gas. These valves have rising stems and integral seats. Sizes 2-inch and smaller have union bonnets; sizes 2½ and 3-inch have bolted bon-

nets. Valves up to and including ¾-inch have solid wedge discs; 1-inch and larger have split wedge discs. These valves can be repacked under pressure when fully opened.

Walworth No. 225P Bronze Globe Valves (Angle Type; No. 227P) are rated at 350 psi working steam pressure, 550F; and 1000 psi non-shock service on cold water, oil and gas. The stainless steel, plug type seat and disc — heat treated to 500 Brinell — can be closed on sand, slug, scale and similar floatage, without injury to the seating surfaces. They are the longest wearing, TOUGHEST bronze valves you can buy.

For full information about Walworth Quality Bronze Valves, see your Walworth distributor, or write:



GLOBE



GATE



ANGLE

WALWORTH valves and fittings

40 EAST 42nd STREET

NEW YORK 17, N. Y.

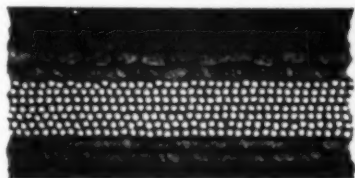


CHECK

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



Cross-section of belt reinforced with 7 plies of "Cordura." This belt is designed to lift 1000 tons of overburden per hour up 15' slope over 1100-foot centers. Design tension 900 pounds per inch of width. Below is magnified section.



**packs strength
into a
CONVEYOR BELT
CARCASS**

Engineered to provide high strength at low cost, Du Pont "Cordura" Rayon can be helpful to conveyor belt users and manufacturers in many ways.

Because of the great strength of "Cordura" Rayon, a conveyor belt with a carcass of this material can be made much lighter, without sacrificing load-carrying ability. And the same high tensile strength also meets the need for long belts that eliminate costly transfer points.

"Cordura" rayon is now widely used to make V-belts stronger, and more efficient . . . to make heavy-duty tires with a thinner, tougher carcass . . . to increase the bursting strength of hose—or make it much lighter.

Check the various ways in which "Cordura" rayon can help you get improved conveyor belt service. And next time you order a conveyor belt, ask your supplier for a carcass made with Du Pont "Cordura" High Tenacity Rayon. In the meantime, write Du Pont for further information about the use of "Cordura" in conveyor belts.

Address Room 4527, Rayon Division, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.




**Look to "Cordura" Rayon
for these conveyor belt advantages:**

- ★ Greater tensile strength
- ★ Longer life
- ★ Heavier loads
- ★ Improved troughability
- ★ Longer lifts with fewer transfer points
- ★ Lighter belts that are easier to set up
- ★ Resistance to flexing
- ★ Resistance to loading impacts
- ★ Reduced operating power expense

**DU PONT "CORDURA"
HIGH TENACITY RAYON**

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

For RAYON . . . for NYLON . . . for FIBERS to come . . . look to DU PONT



FATE laughs at probabilities

Probably those underground mine timbers are free from decay . . . *probably* the mine's ventilating system is in good working order . . . *probably* the elevator shaft cables are safe . . . but you can never be sure of complete mine safety with "probabilities".

Bituminous Casualty Corporation removes all doubt concerning mine safety with its extensive Safety Engineering Program. Available to Bituminous Workmen's Compensation policyholders, this program helps save lives and reduce the frequency and severity of accidents. It includes regular mine inspections . . . analysis of mine hazards . . . survey recommendations . . . accident prevention activities . . . reduction of operating expenses resulting from accidents . . . and establishment of production efficiency.

Mine owners, operators and workers alike are served by Bituminous Casualty Corporation and its Safety Engineering Program.

**BITUMINOUS CASUALTY
CORPORATION**
ROCK ISLAND  ILLINOIS

SECURITY WITH SERVICE

TRY US FIRST

-when you need High Strength Steels

REMEMBER, when you use U. S. S. COR-TEN or U. S. S. MAN-TEN, instead of carbon steel, your steel supply will go one-third farther. Our warehouses from coast-to-coast will do their best to supply your needs in any of these four High Strength Steels—"The steels that do more." Phone, wire or write the warehouse or sales office nearest you.

U. S. S. COR-TEN—A steel that has a yield point $1\frac{1}{2}$ times that of structural carbon steel . . . that has greater impact strength and abrasion resistance . . . and whose resistance to atmospheric corrosion is 4 to 6 times higher.

U. S. S. MAN-TEN—A steel that has twice the atmospheric corrosion resistance of plain carbon steel. Tough . . . high strength . . . hard-wearing and highly resistant to shock and vibration.

U. S. S. ABRASION-RESISTING—Fills need for a low-cost, abrasion-resistant steel. Costs little more than plain carbon steel. In certain applications wears as well—sometimes better—than higher priced alloys.

U. S. S. MANGANESE-NICKEL-COPPER—Affords weight reduction through high strength, greater toughness and improved characteristics in applications involving cold forming, metal are welding and moderately severe impacts in low temperature service.

Fill in and mail the coupon NOW for free booklets on U. S. S. High Strength Steels.

United States Steel Supply Company
Dept. A-49, 208 S. La Salle St., Chicago 4, Ill.
Without obligation on our part, please send us free booklets on U. S. S. High Strength Steels.

Name Title
Firm Name
Address
City Zone State



UNITED STATES STEEL SUPPLY COMPANY

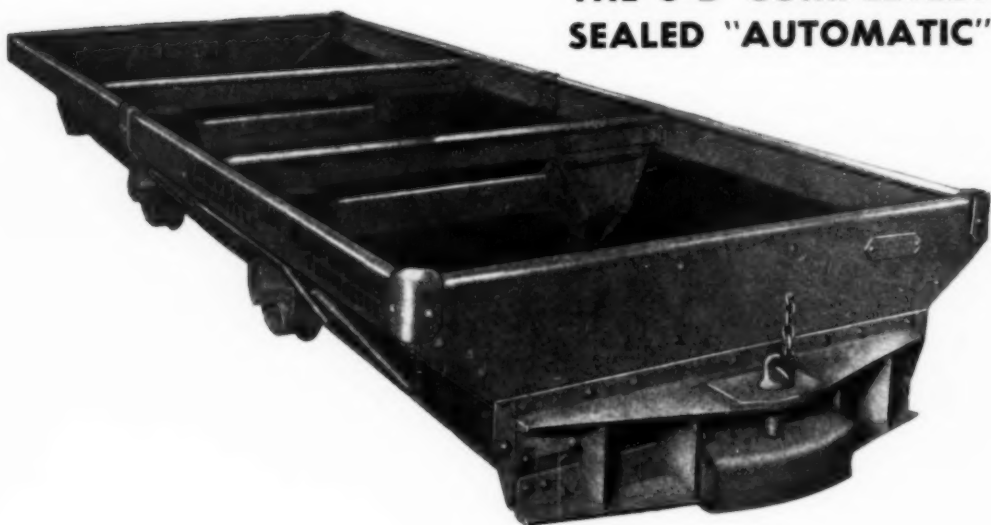


Warehouses: BALTIMORE • BOSTON • CHICAGO
CLEVELAND • LOS ANGELES • MILWAUKEE • MOLINE, ILL. • NEWARK • PITTSBURGH
PORTLAND, ORE. • SAN FRANCISCO • SEATTLE • ST. LOUIS • TWIN CITY (ST. PAUL)
Also Sales Offices at: KANSAS CITY • PHILADELPHIA • TOLEDO • TULSA • YOUNGSTOWN
Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.

UNITED STATES STEEL

Operators Asked for It— Now, Sanford-Day Builds It

**THE S-D COMPLETELY
SEALED "AUTOMATIC"**



Some mines report spending thousands of dollars annually in cleaning coal dust from track beds. Now is a good time for operators using drop bottom cars to analyze this cost item. Whether it is \$5,000, \$2,000 or any cost at all, it is too much when you can have dust-free tracks with S-D Completely Sealed "Automatics". S-D "Automatics" are now 100% dust sealed, even at the wheel hoods. A "Dust Roof Seal" has been provided by a sill and door structure that permits lengthening the car side to bridge necessary clearance space between the drop bottom door and the car frame. Thus, instead of the dust dribbling out through these unprotected spaces onto the tracks it is carried over and deposited on the bottom of the door where it stays until it is dumped in the bin with the coal. With their long-life construction, big capacity, automatic "Jerkout" unlatching device, and now, completely sealed against dust leakage, S-D "Automatics" continue to be the No. 1 mine car in the industry. With the new COMPLETELY SEALED feature, S-D "Automatics" are now of even greater importance to profitable coal mine operation. Let one of our engineers discuss these outstanding cars with you.

20 Car loads of "Automatics" from—


SANFORD-DAY IRON WORKS, Inc. Knoxville 9, Tenn.



Cuts Pump Upkeep

**COST DOWN MORE
THAN HALF IN 4
YEARS SERVICE AT
MICH. CITY PLANT**

SAYS A. C. LOHSE, General Power Engineer, Pullman-Standard Car Manufacturing Company — "Maintenance costs on our old pump were sky-high, so in March, 1945, we installed this *Electrifuqal* pump to move condensate from our compressors and hydraulic pumps. It has run 16 hours a day, five days a week with only routine maintenance and one repacking. Cost per gallon is less than half what it was and performance is much more dependable."

This is the kind of dependable, cost-lowering service you can get from *Electrifuqal* pumps. Motor and pump are

mounted on *one* shaft in *one* solid frame for maximum rigidity. Feet are wide spread for firm support. Bronze ring protects casing from wear by impeller and is easily replaced when required.

Every *Electrifuqal* pump is tested at the factory. Performance is guaranteed.

Allis-Chalmers makes hundreds of pumps for many types of service. For full information, see your A-C Authorized Dealer or District Office, or write for Bulletin 52B6059E. Also in Sweet's, A 2640

ALLIS-CHALMERS, 968A SO. 70 ST.
MILWAUKEE, WIS.

Electrifuqal, *Texrope* and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

**Sold . . .
Applied . . .
Serviced . . .**

by Allis-Chalmers Authorized Dealers,
Certified Service Shops and District
Offices throughout the country.



MOTORS — 1/2 to
25,000 HP and up.
Matching Allis-Chalmers
Control.

TEXROPE — Belts in
all sizes and sections,
standard and Vari-
Pitch sheaves, speed
changers.



PUMPS — Integral
motor and coupled
types. Sizes and rat-
ings to 2500 GPM.





Portrait of an **OUTPUT LEADER**

Increasing demand for coal from open-pit mines emphasizes the importance of fast-working, dependable excavators like this Bucyrus-Erie 9-W 10-yard walking dragline. With its great range, capacity and speed, the 9-W is an output leader in moving millions of tons of overburden at exceptionally low operating and maintenance costs. Its simple design features strength for hard work in every part, yet eliminates useless deadweight that slows cycles. A wide, strong base means a firm foundation for speedy action, with center of gravity shifting only between predetermined limits, so rim pressures are low and "coning" under

the base reduced to a minimum. Its sturdy, reliable walking mechanism enables the 9-W to step safely, surely and smoothly in any direction. Machine parts are large, few in number, easily accessible for maintenance. All these and many other features contribute to the outstanding performance records achieved wherever the 9-W goes to work.



SOUTH MILWAUKEE, WISCONSIN



The Proof of Economy is in **PERFORMANCE**



Tell us how you use wire rope, and we shall be glad to help you select the correct size and construction for your particular needs.

With wire rope, as with various other equipment, many claims can be presented... but in the final analysis, it is the record of **PERFORMANCE** that determines the ultimate cost.

By actual *on-the-job* service — over a period of many years—Preformed "HERCULES" (Red-Strand) Wire Rope has consistently proved its value by this accurate yardstick of performance.

Yes, for easier handling, safe and economical results, you can depend on the Red-Strand as your wire rope guide. In "HERCULES" there is a "right rope" for every heavy duty job.

We Invite Your Inquiries

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

NEW YORK 6
LOS ANGELES 21

CHICAGO 7
SAN FRANCISCO 7

HOUSTON 3
PORTLAND 9

DENVER 2
SEATTLE 4

**Inside Knowledge
on Lubrication Problems
—SHOCK LOADS—**

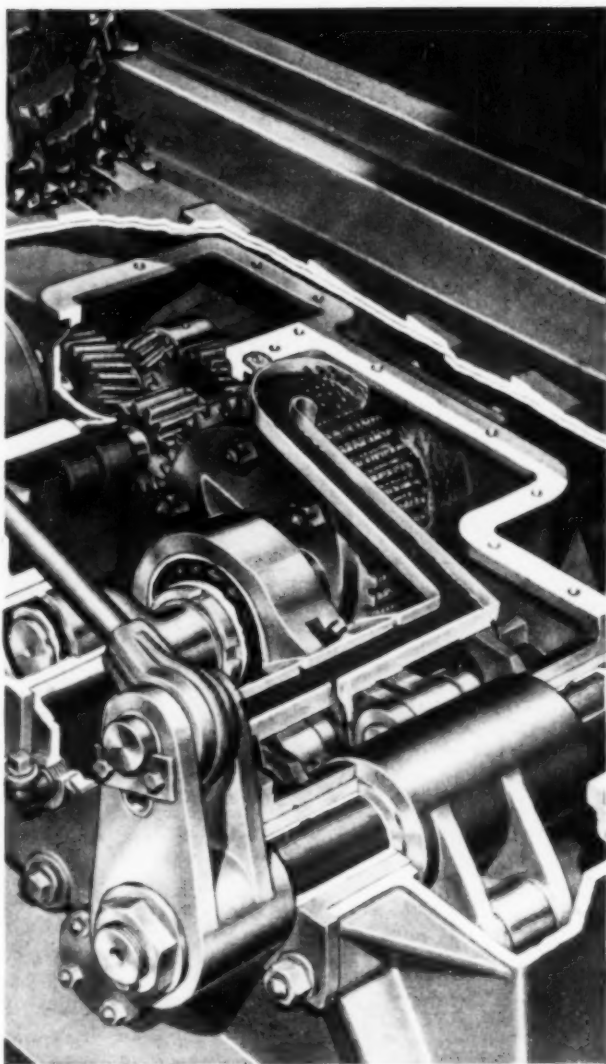
*This is One of a Series of Messages
on Lubrication Problems in Your Plant*

Oil Gets a Shake-up Here!

As coal is moved along this shaker conveyor, the drive gears and bearings are subjected to the shocks resulting from the constant shaking, jerking motion.

It takes an oil that will stand up under continuous shock loads to cushion these vital parts against metal-to-metal contact and wear. At the same time, this oil also must flow freely through the troughs and small openings.

Gargoyle Vactra Oil AA distributes completely throughout the entire mechanism and forms strong wear-resisting films on all rubbing surfaces. It's in use in many mines where it has reduced wear to a minimum and brought important



savings in time and repair bills.

See your Socony-Vacuum Representative now and get this proved lubricant in your shaker conveyors.

SOCONY-VACUUM OIL CO., INC.
and Affiliates: Magnolia Petroleum Company
General Petroleum Corporation



Socony-Vacuum Correct Lubrication

FOR EVERY MACHINE . . . EVERY OPERATING CONDITION



THIS BIG DIPPER GETS DOWN TO EARTH

When this huge bucket bites into rock and dirt, it lifts away a 30-cubic-yard load—to uncover the rich supply of coal that lies *near the earth's surface*. For not all coal is mined deep underground, as you might suppose. In a single year as much as 135,000,000 tons of quality coal has come from surface mines like these.

To uncover this rich supply of home and industrial fuel, the progressive coal industry has introduced many revolutionary machines and methods. Giant shovels—today costing as much as \$850,000 apiece—are only single items in this new phase of mining. And under the ground, as near the surface, coal mining represents new strides in mechanization of a basic American industry . . . in which a half-billion-dollar modernization program over the next three years alone gives assurance that American homes and industry will not lack for ample supplies of fuel.

Mechanization of America's progressive bituminous underground coal mines—in which more than 91% of production is mechanically cut and 60% is mechanically loaded—is evidence of the vast technical skill behind America's coal production records.

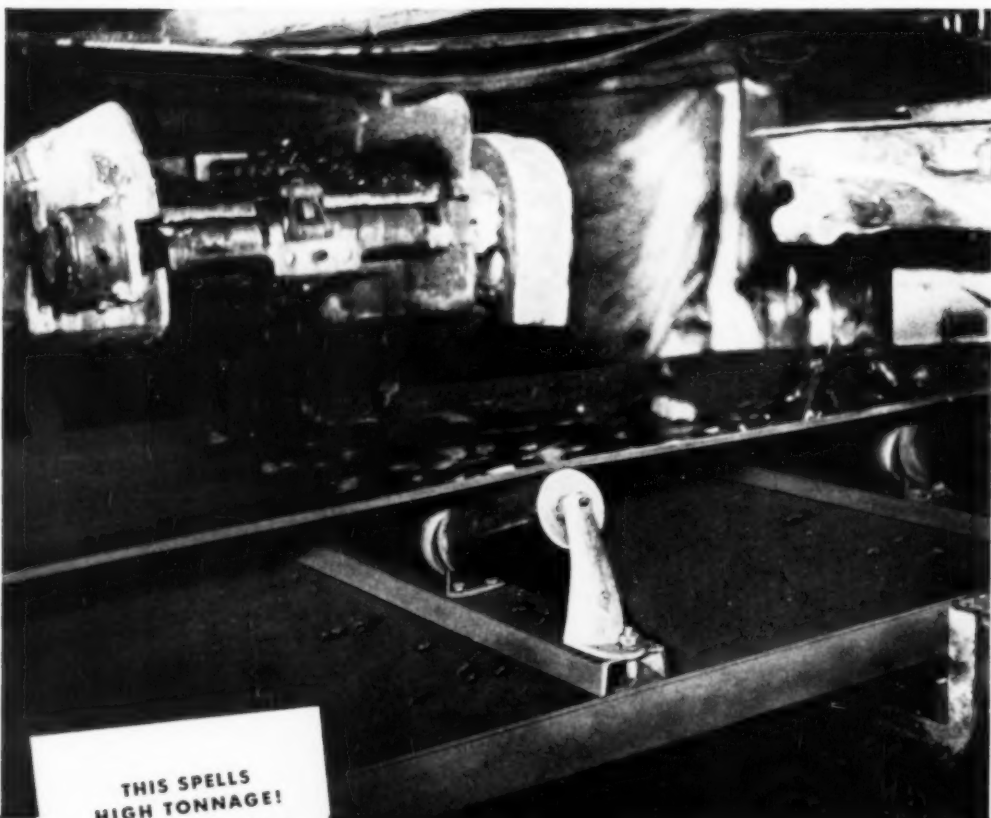
Today's mines themselves—as well as their rail and conveyor belt systems, and efficient coal treating plants for preparing coal for shipment—are carefully planned for safety, productive efficiency, and maximum conservation of coal's resources. Today coal mining is an increasingly attractive and satisfying field for young men with engineering talent and skill.

BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE
A DEPARTMENT OF NATIONAL COAL ASSOCIATION
WASHINGTON, D. C.

BITUMINOUS COAL . . . LIGHTS THE WAY . . . FUELS THE FIRES . . . POWERS THE PROGRESS OF AMERICA

How to speed coal *... as fast*



**THIS SPELLS
HIGH TONNAGE!**

A Hewitt-Robins Mine Conveyor working in perfect unison with one of the new mechanical coal diggers. Production is high. Equally important, coal is moved out as fast as it is cut.

**OTHER HEWITT-ROBINS PRODUCTS
PREFERRED BY THE COAL INDUSTRY**

- Sizing screens
- Dewaterizers
- Suction hose
- Car shakeouts
- Water hose
- Slope conveyors

to the surface *as you can cut it!*

Use high-speed Hewitt-Robins Mine Conveyors to keep pace with modern cutting tools

One fact is becoming clearer every day to mine operators who must meet new production demands.

To get the most out of modern production machinery, they must be able to back it up with modern *handling* machinery.

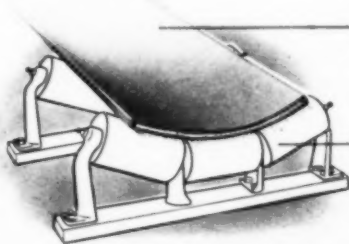
These men realize that when they produce coal at higher speeds they must move it to the surface equally fast. Otherwise, they create costly pile-ups and delays.

As a result, more and more operators are getting set for higher production by installing Hewitt-Robins Mine Conveyors *now*. And with good reason! For these men find that Hewitt-Robins Mine Conveyors will haul coal out *as fast as they can cut it* . . . and will continue to do so year after year *at low cost*.

That's because Hewitt-Robins is the only company that can take full responsibility for *all* mine conveyor elements—including both mechanism *and* belting. Naturally, you get parts that work together better and last longer!

And remember, you can get Hewitt-Robins Mine Conveyors *complete* . . . machinery, belt, motors and reducers . . . in 26", 30" and 36" widths . . . right out of stock in Passaic, N. J. or Charleston, W. Va. And if your capacity requires bigger equipment, you can also get standard H-R Mine Conveyors in widths of 42" and 48".

Investigate Hewitt-Robins Mine Conveyors. Write Robins Conveyors Division, Passaic, N. J.—*today!*



HEWITT BELTING—built for underground service.

STEPPED-PLY CONSTRUCTION. Developed by Hewitt to provide ideal troughing. **MILDEW- AND ACID-RESISTANT.** Special neutralizing compounds assure the protection that spells longer belt life.

ROBINS IDLERS for extra strength and economy.

ONE-SHOT LUBRICATION. Cuts your lubricating time less than half. **TRIPLE GREASE SEAL.** Locks grease in. Seals dirt and moisture out. **RIGID TRUSS CONSTRUCTION.** Stronger than any other design.

HEWITT-ROBINS MINE CONVEYORS

**HEWITT RUBBER DIVISION
HEWITT-ROBINS**



**ROBINS CONVEYORS DIVISION
INCORPORATED**

A Good Beginning for Any Product

When specifications call for "Norma-Hoffmann or equal" the product is off to a flying start for a trouble-free life. Designers know it. That's why they have registered their preference for Norma-Hoffmann on thousands of blueprints in the last thirty-seven years.

SPECIFICATIONS
BEARINGS
GEARS: 1:1111

NORMA-HOFFMANN OR EQUAL

NORMA-HOFFMANN BEARING CORPORATION, NEW YORK, N.Y.

[illegible][illegible]

A Good Beginning for Any Product

When specifications call for "Norma-Hoffmann or equal" the product is off to a flying start for a trouble-free life. Designers know it. That's why they have registered their preference for Norma-Hoffmann on thousands of blueprints in the last thirty-seven years.

SPECIFICATIONS
BEARINGS
GEARS: 1:1111

NORMA-HOFFMANN OR EQUAL

NORMA-HOFFMANN BEARING CORPORATION, NEW YORK, N.Y.

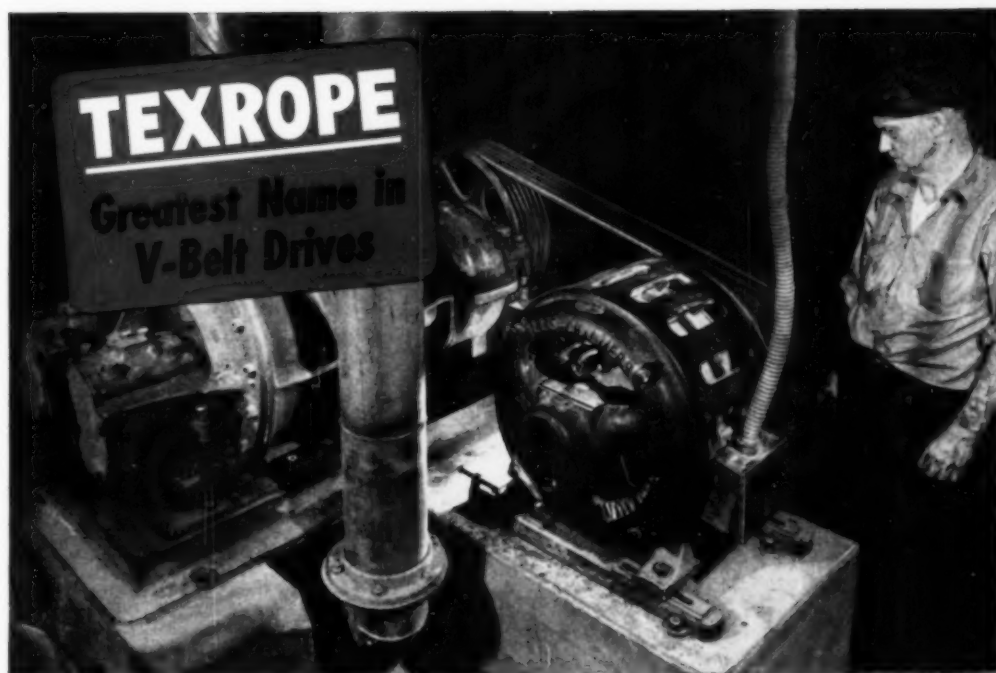
A Good Beginning for Any Product

When specifications call for "Norma-Hoffmann or equal" the product is off to a flying start for a trouble-free life. Designers know it. That's why they have registered their preference for Norma-Hoffmann on thousands of blueprints in the last thirty-seven years.

SPECIFICATIONS
BEARINGS
GEARS: 1:1111

NORMA-HOFFMANN OR EQUAL

NORMA-HOFFMANN BEARING CORPORATION, NEW YORK, N.Y.



"No Upkeep Now"

**BELT SLIP ELIMINATED,
BEARING DAMAGE
STOPPED, POWER WASTE
ENDED WHEN *TEXROPE*
V-BELT DRIVE
REPLACES FLAT BELT.**

CHIEF PLANT ENGINEER in this midwest plant says, "The old flat belt on this blower drive was twelve inches wide on twenty foot centers. Not only was it heavy but it also absorbed a lot of power.

"Besides that, dust made the belt slip constantly. We had to keep the belt so tight that it ruined bearings. And slipping would burn the belt. Maintenance on our old flat belt drive cost us hundreds of dollars every year.

"Four years ago an Allis-Chalmers representative recommended this *Texrope* drive. It doesn't slip at all, doesn't hurt the bearings and we haven't spent a cent on it. I wish we had changed to a *Texrope* drive years sooner."

Money-saving performance like this is one of the reasons why more *Texrope* in-

dustrial V-belt drives have been installed since 1926 — when Allis-Chalmers originated the multiple V-belt drive — than any other kind.

The *Texrope* line gives you practically everything you need for any V-belt drive . . . V-belts, standard and *Vari-Pitch* sheaves and speed changers . . . all from one reliable source. You can engineer 90% of all V-belt drives yourself with the help of the *Texrope* Pre-engineered Drive Manual. See your A-C Authorized Dealer or District Office or write for Bulletin 20B6956. Also in Sweet's.

Texrope Super-7 V-belts result from the cooperative research of Allis-Chalmers and B. F. Goodrich; and are sold only by A-C dealers and offices. *Texrope* and *Vari-Pitch* are Allis-Chalmers trademarks.

A 2648

ALLIS-CHALMERS, 968A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS

Sold . . .

Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers,
Certified Service Shops and District
Offices throughout the country.



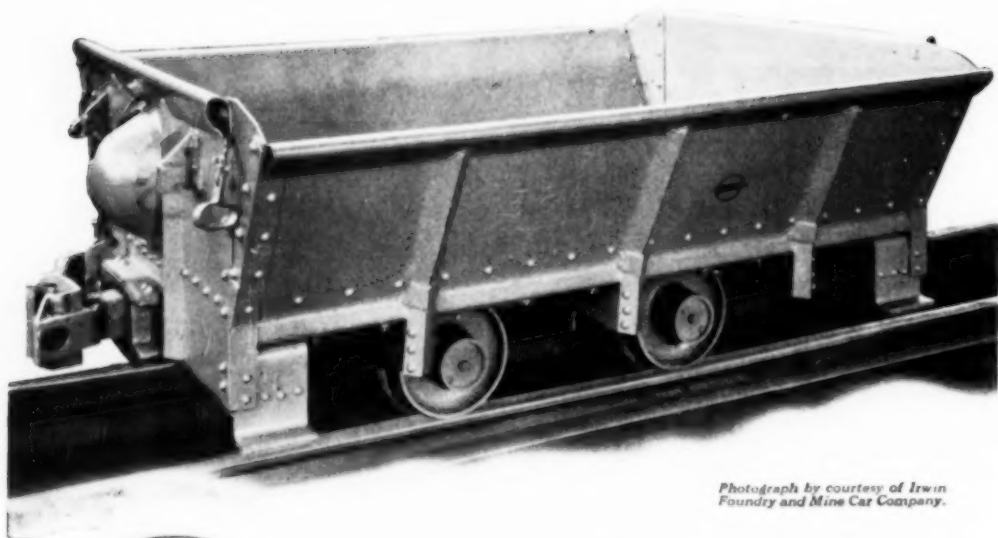
MOTORS — 1/2 to
25,000 HP and up.
Matching Allis-Chalmers
Control.

TEXROPE — Belts in
all sizes and sections,
standard and *Vari-Pitch*
sheaves, speed
changers.



PUMPS — Integral
motor and coupled
types. Sizes and ratings
to 2500 GPM.





Photograph by courtesy of Irwin Foundry and Mine Car Company.



WILLISON *automatic* COUPLERS

PAY THEIR OWN WAY

ON ANY SIZE OR TYPE OF CAR

Mine and industrial cars are handled faster and safer when equipped with Willison Automatic Couplers. Size of the car doesn't matter. Willison Coupler advantages apply equally to small 4-wheelers or big 8-wheelers.

Their No. 1 advantage is *safety*. During coupling and uncoupling, there is no need to go between cars if Willison Couplers are on the job.

Willison Couplers cut down haulage time because they're always ready to couple when brought together. Their contours being alike, they couple instantly even though cars are reversed.

Simple, sturdy construction gives Willison Automatic Couplers long life. Two essential parts—the head and the lock—do the work. Shocks and strains are minimized—your equipment lasts longer, costs less to maintain.

In safety, speed of handling, easy operation and long life, Willison Automatic Couplers are a "must"!



NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

CLEVELAND, OHIO

WILLISON AUTOMATIC COUPLERS • NACO STEEL WHEELS • NACO STEEL LINKS AND SWIVEL HITCHINGS

All-round tool around a mine



Steep cuts and much rock characterize Smith and Stokes Mining Company's Blue Valley Mine near Madisonville, Ky. Handiest tool on the operation is this sturdy "Caterpillar" No. 7A Angling Bulldozer matched with a "Caterpillar" Diesel D7 Tractor.

NAME your job—stripping overburden, building roads, feeding drag-lines or shovels, cleaning up around shovels—a 'dozer gets the call. It's the handiest, all-round tool you can use. And "Caterpillar" builds the unit that has won its right to the title, "Boss of the Bulldozers."

Here are five features that give this rugged 'dozer the edge:

1 Controls (cable or hydraulic) give the operator instant, accurate control of the cut. No time is wasted in spinning tracks or excessive lugging down. Only "Caterpillar" Cable Control has multiple-disc, metallic-lined clutches for easy engagement and disengagement.

2 High-tensile special steels put long life into every blade, scientifically curved to keep materials rolling ahead.

3 Working parts are heat-treated to withstand heavy wear.

4 Angling, tilt or tip adjustments are easy to make—a quick, one-man job for the operator.

5 No overhead frame to interfere with visibility. The operator has a full view of the job.

In this picture you see a cable-controlled "Caterpillar" No. 7A Angling Bulldozer teamed with a "Caterpillar" Diesel D7 Tractor—a perfectly matched unit. Let your "Caterpillar" dealer tell you about the advantages of "Caterpillar" matched equipment. He's as close as your phone for information or prompt, competent service.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL

ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT



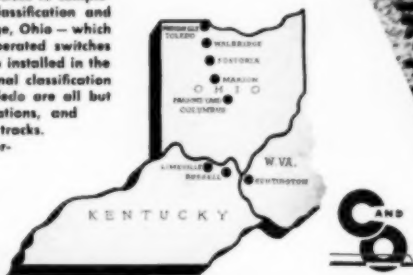
IMPROVEMENT IS THE MEASURE OF

Progress!

The coal industry can join with Chesapeake and Ohio in being proud of the vast improvement program designed to perfect coal handling at Presque Isle . . . and proud, too, of the record tonnages which these improvements have already effected.

This gigantic program involves improvements at various points from Russell, Ky., to Presque Isle, most of which are now close to completion. At Russell, enlargement of the westbound classification and receiving yards will soon be completed. At Walbridge, Ohio — which serves Presque Isle — 15 car retarders, 53 tower-operated switches and 106 power and hand operated slates have been installed in the yard; also, 2 hump receiving tracks and 15 additional classification tracks. Improvements between Russell, Ky., and Toledo are all but completed on additional third tracks, CTC installations, and remote control tower switch signals at 21 passing tracks. Rearrangement and improvement of the engine terminal facilities at Parsons Yard (Columbus) is 99% completed. And at Fostoria, Ohio, work on interlocking at crossings with three other railroads, is progressing.

All these improvements plus many others now under way for C & O, spell progress in the more efficient handling of coal at Presque Isle and all along the line . . . progress which assures C & O's continued growth along with the great coal industry.



CHESAPEAKE & OHIO RAILWAY

Largest Originating Carrier of Bituminous Coal in the World

*There's a Macwhyte Rope that's the
right rope for your equipment*

**All job-proved—a thousand and one
wire ropes to choose from**

For easy handling and longer service use
PREformed Whyte Strand—it's inter-
nally lubricated.

Ask a Macwhyte representative to
recommend the rope best suited for your
equipment.

**Macwhyte
Wire Rope**



MACWHYTE COMPANY

2931 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated
Wire Rope, Braided Wire Rope Slings,
Aircraft Cables and Assemblies, Monel
Metal and Stainless Steel Wire Rope.

Catalog on request

Our distributors and mill depots throughout the
U. S. A. and other countries carry stocks for
immediate delivery.

Mill depots

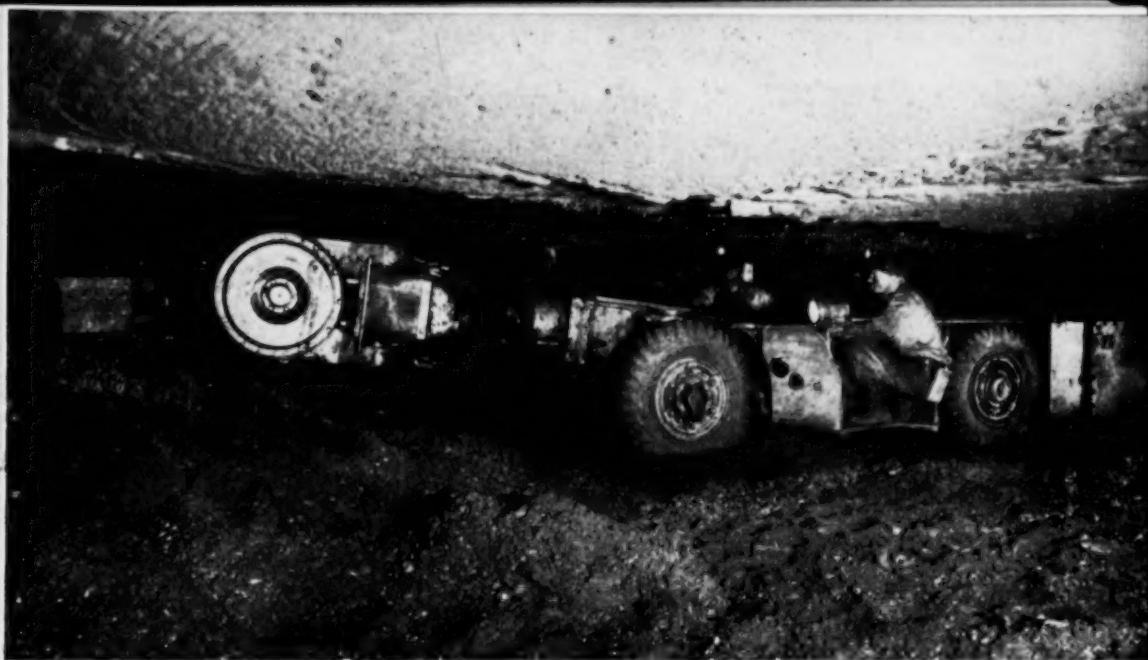
New York • Pittsburgh • Chicago • Minneapolis
Fort Worth • Portland • Seattle • San Francisco
Los Angeles



FOR FASTEST, LOWEST-COST
ALL-PURPOSE CUTTING IN THIN SEAMS . . .

YOU WANT
THE

JOY II-RU
UNIVERSAL CUTTER



Licensed under the Patent to E. C. Morgan, No. 1,953,315

- ★ **Only 31" high, for top efficiency in low coal**
- ★ **Makes shear, top, middle or bottom cuts anywhere in the face—no blind spots**
- ★ **Fast cutting—fast tramming—highly maneuverable—saves time**
- ★ **All-hydraulic operation—finger-tip control**

WRITE FOR BULLETIN, OR

14-BU LOADER

Follow up the 11-RU with the JOY 14-BU, a heavy-duty, high-production loader that works with top efficiency in seams as low as 34". Capacity up to 8 tons/min.



6-SC SHUTTLE CAR

The JOY 6-SC, your best bet for fast, low-cost transfer in thin seams. Equipped with hydraulic cable reel, 4-wheel drive, 4-wheel steering and hydraulic elevating discharge.



*Consult a
Joy
Engineer*



W&D CL2410

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

TRUCKS
and
SHOVELS
keep on the

move



when you detonate with **PRIMACORD**

You can figure on better digging when you shoot with Primacord. *Operations speed up all along the line.*

Primacord does this with a combination of forces that team up to give you more complete fragmentation. Down-hole lines initiate the whole charge instantly, from top to bottom, with all the power of primer cartridges. Main lines can be laid out so that front holes go a split

second before succeeding ones, allowing for planned relief of burden.

You can get Primacord, wound on easy-to-handle spools, in a grade to meet every blasting condition. It's insensitive to stray currents, and hooks up as fast as you can tie square knots or half hitches. Ask your supplier about Primacord, or write direct to The Ensign-Bickford Company, Simsbury, Connecticut.

P-23

PRIMACORD-BICKFORD

Also Ensign-Bickford Safety Fuse Since 1836

**Detonating
• Fuse •**

APRIL, 1949

IVAN A. GIVEN, EDITOR

Immediate Need

WHAT A REPRESENTATIVE group of coal men, both anthracite and bituminous, think of proposals for improving the negotiation of wage contracts is the subject of "Better Bargaining for Coal" beginning on the next page of this issue. Their ideas are certainly food for thought. They should be the basis for immediate action, since contract time is just around the corner and the March strike is evidence that dealing with Mr. Lewis will be no less difficult than in the past. Coal men undoubtedly will need, as always, the best possible negotiating set-up if they are to have a chance at holding their own or, better still, achieving some changes that will prevent unnecessary and willful work stoppages and promote peaceful progress.

While there is no blinking the fact that Lewis is in an extremely strong position as a result of the key role of the mining industry and governmental and legislative favoritism that has made it possible for him to force inclusion of contract provisions giving him a free hand. But the March strike, especially if followed by other arbitrary acts, might well result in a change in public attitude that would redress to some extent the balance of power. Naturally, the industry should be ready for any such change with the strongest-possible negotiating set-up. Even without that, the set-up must be strong if any progress at all is to be made in coping with such new demands as share-the-work, higher welfare payments, higher wages and so on.

New Wrinkle

IS THE COAL-MINING INDUSTRY also to have its quota of featherbedders? Until recently, it is fair to say that this thought rarely troubled mine management. Now, however, it appears that

















featherbedding may become an immediate and lively issue in view of proposed legislation offered in at least two states—Pennsylvania and West Virginia. Pennsylvania so far appears to be in the lead in the legislative race with bills requiring, among other things, second motormen and assistant shotfirers. In West Virginia, featherbedding proposals attending an attempt to write a new mine law included a provision that second hoistmen be employed on hoists handling men. Since cost always has and always will be a major factor in industry progress, coal cannot afford even a little featherbedding, let alone a lot. The best time to head off any attempts, whether legislative or otherwise, is when they are first made. Coal, therefore, should be ready.

Helpful Prospect

ALONG WITH their thinking on other costs, many coal men have scanned transportation charges from the mines to the consumers and have wondered if a different transportation medium might not provide a substantial reduction. Now, it appears, an opportunity will be provided for a test as a result of the plans announced for a 103-mile overland belt conveyor from East Liverpool to Lorain, Ohio, with branches to Youngstown and Cleveland (March *Coal Age*, p. 122), to move coal north and iron ore south.

Similar though shorter belts or overland aerial tramways have been discussed in the past for use in certain coal areas. Presumably, this new development should result in renewed attention to these and other suggested projects. Universal use of belts is of course an impossibility in the foreseeable future, but as conveyor transportation improves the number of possible locations will increase, while the possible savings certainly would give coal a lift competitionwise. Expansion of the idea is something coal men will find it easy to encourage and, in fact, participate in.

How Coal Men Feel About Improving Bargaining

PROPOSAL	OPERATOR REACTION
1. Reducing the number of operator negotiators as a means of expediting negotiations, presenting a solidier front and cutting down on personal clashes.	IN FAVOR  82% AGAINST  18%
2. Granting broader powers for negotiators to make contract commitments without delaying the joint conference to consult their constituents.	IN FAVOR  81% AGAINST  19%
3. Setting up a full-time liaison committee of operators to keep in touch with the union on contract interpretation, industry economics and labor relations the year around, this same group to bargain for new contracts when old agreements expire.	IN FAVOR  89% AGAINST  11%
4. Abolishing the operators' negotiating committee and vesting operator representation in one man, employed full time and chosen for his knowledge of the industry and his skill as a negotiator.	IN FAVOR  52% AGAINST  48%
5. Taking the initiative by entering negotiations with a constructive set of negotiable proposals instead of waiting for the union to make demands.	IN FAVOR  97.5% AGAINST  2.5%
6. Setting up an operators' public-relations agency to release spot news of day-by-day progress in negotiations.	IN FAVOR  90% AGAINST  10%
7. Reducing the length of the negotiating period by making written proposals prior to opening the joint conference, restricting debate to relevant issues and leaving fringe issues and minor disputes to a permanent joint liaison committee of operators and the union.	IN FAVOR  90% AGAINST  10%
8. Opening wage conferences to the press and the public.	IN FAVOR  59% AGAINST  41%

Better Bargaining for Coal

New Approach to Wage Talks, Year-Round Liaison with Union and Stronger Public Relations Seen As Necessities by Operators—Strong Leadership a Vital Factor—Action Needed for Negotiations Just Ahead

THE OPENING MOVE in coal's annual contract negotiations was made when Mr. Lewis ordered miners east of the Mississippi to stay out of the pits for two weeks beginning March 14. Does this mark the beginning of another drawn-out siege, with sure defeat for the operators? Or will union officials and operators alike, profiting by the lessons of the past and yielding to current dissatisfaction with bargaining methods, settle their differences in peace, with benefits to workers, industry and coal users?

With pessimism rooted in unhappy experience, some operators take a dim view of the outlook for peace. Mr. Lewis has not changed, they point out. Besides, having got all he asked for in years past, why should he be expected to change?

On the other hand, with last year's disputes cleared away, there are a few symptoms pointing to better bargaining this year. These symptoms will need a lot of nursing along and some positive action, with possibly some sweat and tears. But there still is time before wage talks start to strengthen the operators' bargaining position and improve the chances for a fruitful and smooth-working contract.

In broad outline, these are the symptoms of better days ahead:

1. Among a good many operators, dissatisfaction with the industry's public conduct in years past.

2. Some serious thinking and talking among those who seek better ways to solve coal's contract problems.

3. Fear of government seizure and nationalization if the industry fails to put its house in order.

4. An expression of hope by two operator negotiators that, if it lay within their power to prevent it, wage talks would not go sour again.

5. A joint pledge by the union and operators, after agreement was reached last June, to refrain as far

as possible from public bickering and denunciation.

While the "memorial" stoppage may change the situation, both parties honored their pledge to stop name-calling in public. Meanwhile, the miners, having got their welfare-and-pension plan going while they draw down the highest wages on record, have had little cause for complaint and the operators have been careful not to build a fire under them. Thus, there was a good chance that both parties would enter the conference room this year in a better frame of mind than in 1948.

Signaling an uneasy feeling that wage talks had not gone well in the past and a desire for better bargaining, two operator negotiators—the late Charles O'Neill, president, United Eastern Coal Sales Corp., and Harry Moses, president, H. C. Frick Coke Co.—told the Coal Mining Institute of America last

December how they thought the operators could improve their approach to bargaining and urged the industry to call up its best leaders to improve contract relations (*Coal Age*, January, 1949). The changes they suggested, including more authority for negotiators, a more conciliatory attitude and stronger leadership, are wholly constructive.

Operator sentiment favoring a change—almost any change—is reflected in the answers of 81 coal producers—78 bituminous and three anthracite—to a questionnaire sent them following publication of "Better Bargaining for Coal" (*Coal Age*, August, 1948). The questionnaire asked operators to state whether they favored or opposed eight proposals for bargaining changes and to comment on these and related matters. The opinions expressed, coming from the North, the South, the Middle West and the Far West and from large, medium-size and small companies representing some 15 percent of the bituminous and anthracite production, are believed to be a fair sample of industry thinking. The operators' votes, together with the original proposals, were as follows:

PROPOSAL 1



Reducing the number of operator negotiators as a means of expediting negotiations, presenting a solidier front and cutting down on personal clashes.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	83
South	85
Middle West	83
Far West	55
Anthracite	100
Entire industry	82

BY DAILY TONNAGE

50-499	79
500-999	87
1,000-4,999	80
5,000-14,999	91
15,000 and over	72
Entire industry	82

THE SUPPOSITION leading to this proposal is that the fewer negotiators there are, the greater the chances for a united stand and the fewer targets for personal exchanges during wage talks. The 82-percent vote favoring the proposal suggests that it has some merit.

However, even among those favoring Proposal 1, as well as those who opposed it, concern was expressed lest a cutback in the num-

ber of negotiators leave some regions without adequate voice in wage talks. Least favorable sentiment came from the Far West, where operators perhaps feel that they have not been properly represented in past negotiations. Elsewhere, opinion was stronger in favor of the proposal or some modification of the proposal. A Midwest operator, for instance, suggested that, in addition to cutting down the size of the operators' commit-

tee, the committee be directed to maintain close contact with the union throughout the year. Another, from the South, thought

wage talks should be conducted by a single operator spokesman supervised closely by a committee of producers. However, most of those who

avored Proposal 1 did so without qualification and saw in it some hope of speeding wage talks to a more satisfactory conclusion.

PROPOSAL 2



Granting broader powers for negotiators to make contract commitments without delaying the joint conference to consult their constituents.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	71
South	85
Middle West	92
Far West	78
Anthracite	67
Entire industry	81

BY DAILY TONNAGE

50-499	78
500-999	87
1,000-4,999	78
5,000-14,999	92
15,000 and over	83
Entire industry	81

THIS PROPOSAL assumes that wage talks could be spurred to an earlier end if cloakroom conferences and long-distance telephone calls to constituents back home could be

abandoned. The idea would be to empower representatives to act, send them into the conference room and then leave them alone to work out a contract with the union.

Least support for Proposal 2 came from the North, with one operator denying that negotiations had been delayed by cloakroom consultations. Likewise, one Southern producer declared that constituents have not been consulted in the past several years and another argued that negotiators have practically full power now. A Midwest operator pointed out that negotiators should have broad powers to make commitments but that these should be subject to final ratification by each side of the joint conference.

Generally, however, support for Proposal 2 was strong and most operators expressed their favor without qualification.

PROPOSAL 3



Setting up a full-time liaison committee of operators to keep in touch with the union on contract interpretation, industry economics and labor relations the year around, this same group to bargain for new contracts when old agreements expire.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	100
South	73
Middle West	92
Far West	100
Anthracite	100
Entire industry	89

BY DAILY TONNAGE

50-499	100
500-999	87
1,000-4,999	84
5,000-14,999	85
15,000 and over	86
Entire industry	89

THE PURPOSE behind Proposal 3 would be to turn the industry's bargaining over to men who, by virtue of their close observation of the week-by-week changes in economic conditions and labor and public thinking, could appraise the industry's situation accurately, reach better-informed decisions and perhaps even settle some issues before they splashed into the newspaper headlines or embroiled the annual bargaining conference in paralyzing arguments.

As indicated in the above breakdown, sentiment favoring this proposal was least strong in the South, although even there the vote was 73 percent in favor. The reasons for lack of enthusiasm in some quarters of the South perhaps may be that feeling against industry-wide bargaining is stronger there than anywhere else and that the

bargaining ups and downs of the past two or three years, with Mr. Lewis blowing hot and cold in a southerly direction, have bred disillusionment and despair among some Southern producers. One of them, in fact, remarked that Proposal 3 would be all right if the operators could count on true collective bargaining.

Elsewhere, however, Proposal 3 got stronger support, with one operator contending that it, together with Proposals 2 and 5, expressed the true principles of collective bargaining. Collective bargaining, he pointed out, certainly is a job for full-time specialists, who need not necessarily be top company executives, and certainly should not be dominated by sales experts.

Some producers, even going beyond Proposal 3, added suggestions of their own. One, for example,

proposed naming a commissioner or chairman, employed full time, to work with the liaison committee. Another, besides favoring the full-time liaison committee, suggested forming an advisory committee to be made up of operator representatives from each producing district. Under this plan, the liaison committee would bargain for new contracts and would meet at least twice a year with the advisory committee to determine year-round policy and make plans for the annual wage talks.

A third producer thought that the activities of the present negotiating committee could be improved along the lines of Proposal 3. A fourth, giving his approval to the full-time liaison committee, warned that it should not be made up of men antagonistic to the union. Still another operator, stamping his approval on the proposal, would form a joint board modeled after the anthracite industry's Committee of Twelve—six operators and six miners—to pass on contract interpretations and changes which usually come up during the year and sometimes breed disputes.

PROPOSAL 4, stated on the next page, met with least favorable response of all, with opposition being expressed most vigorously in the North and among operators producing 15,000 tons or more daily. Yet, throughout the com-

PROPOSAL 4



Abolishing the operators' negotiating committee and vesting operator representation in one man, employed full time and chosen for his knowledge of the industry and his skill as a negotiator.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	42
South	57
Middle West	54
Far West	57
Anthracite	0
Entire industry	52

BY DAILY TONNAGE

50-499	57
500-999	43
1,000-4,999	48
5,000-14,999	67
15,000 and over	37
Entire industry	52

ments on this proposal, among those opposing it as well as those favoring it, a strong need was voiced for first-rate leadership among the operators. At the same time, it was felt that whatever merits might lie in one-man leadership, the dangers inherent in one-man dictatorship were very real and should be avoided by the operators.

Comments on Proposal 4 ranged all the way from a straightforward "No! No!" to "Possibly later, when the right man is available." Some doubts were expressed about the wisdom of empowering one man to commit the entire industry. Also,

unfavorable reaction grew out of opposition to industry-wide bargaining, which necessarily would be the method under a one-man negotiator. However, some of those who saw dangers in delegating industry-wide powers to a czar were willing to accept regional czars, who would bargain for each segment of the industry on a region-by-region basis.

Still other operators, while not accepting Proposal 4 entirely, suggested alternate plans growing out of Proposals 3 and 4. The effect of these suggestions would be to name a one-man negotiator to bargain

for the whole industry but to limit his powers and to provide him with an advisory liaison committee of operators and a staff of experts in labor relations and economics.

Coal men who were willing (1) to accept a one-man negotiator, (2) to accept him if his powers were curbed or (3) to file the proposal away for future reference warned that great care should be exercised in choosing a czar. The man, they said, should be forceful, dramatic, wise in public relations and non-partisan in representing the operators.

However, whether they favored or opposed Proposal 4, there was widespread feeling among operators that the coal industry needs stronger and more aggressive leadership in its relations with the union. This feeling, as pointed out earlier, is shared by at least one of the principal operator representatives at past bargaining sessions, Mr. Moses, who last December asked that intelligent, honest and fearless leadership be brought forward on both sides to end coal's internal strife.

PROPOSAL 5



Taking the initiative by entering negotiations with a constructive set of negotiable proposals instead of waiting for the union to make demands.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	91
South	96
Middle West	100
Far West	93
Anthracite	100
Entire industry	97.5

BY DAILY TONNAGE

50-499	100
500-999	100
1,000-4,999	90
5,000-14,999	100
15,000 and over	100
Entire industry	97.5

PROPOSAL 5 attained the highest favorable vote of all eight proposals, reflecting a profound feeling that here is where the operators' biggest repair job needs to be done and that here lies the brightest promise of making real gains. Of the 80 operators expressing opinion on this proposal, 78 favored it.

One of the two operators opposing this proposal, drawing on experience dating back to the time when operators did make proposals, doubted that the industry was much better off than now. The other, referring to wage talks in 1947 and 1948, argued that this policy was adopted in 1948 and, to some extent, in 1947, but that it did not get results at the bargaining table,

though it did improve public opinion of the operators' case.

If, in 1947 and 1948, the operators' negotiations actually did make proposals except as a last resort, ignorance of the fact is widespread among the general public and among operators themselves, who should know, if anybody does, whether bona fide offers were made. "The industry's position has been pitifully weak in this respect in past negotiations," said one producer. Another contended, "If concessions must be made, there is no reason why the operators' committee should not recognize that fact and come prepared with an attitude of flexibility rather than a belligerent attitude." A third comment-

ed, "The operators should know what they want and should take the initiative, not wait until the eleventh hour."

The fact is that Proposal 5 won the strongest support of all. If coal's negotiators really want to improve their bargaining position, this obviously is one move which most of their constituents agree they should make.

REACTION TO PROPOSAL 6 (next page), with 90 percent of those responding answering "Yes," suggests that here, as in the case of Proposal 5, lies fruitful ground for exploration by the operators. The few who opposed the proposal expressed some grave and, it must be admitted, well-founded doubts about the wisdom of conducting an argument in the public press, warning that certain information cannot be given out daily without upsetting some delicate balances at the bargaining table, pointing out that public opinion favoring the operators never has feazed Mr. Lewis and contending that the union's disregard of facts in its press relations, together with public sympathy for the so-called plight of the miner, would offset the operators'

PROPOSAL 6



Setting up an operators' public-relations agency to release spot news of day-by-day progress in negotiations.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	83
South	83
Middle West	100
Far West	85
Anthracite	100
Entire industry	90

BY DAILY TONNAGE

50-499	89
500-999	75
1,000-4,999	97
5,000-14,999	83
15,000 and over	88
Entire industry	90

efforts to shape a better public opinion in their behalf.

This attitude of despair, however, sounds more like a reflection of the way coal's wage-talk public relations have been handled in the past

than an exploration of how they could be improved in the future. The men who favor better public relations at the time of negotiations want to see news and the facts, not propaganda and disputes,

in the newspapers. In addition, they see the job not as a periodic task geared to wage talks alone but as a continuing project throughout the year. As one operator put it, "I think our public and personnel relations in the coal industry are pitifully weak. Proposal 6 should be in large red capitals; but it should not stop when a contract is signed. Publicity consisting of news, not propaganda, should be continued the year around." Another said, "This is the only means by which the public can be given the truth." For this job, some of them, at least, look to Bituminous Coal Institute. All of them want the industry to make some move to win stronger public favor.

PROPOSAL 7



Reducing the length of the negotiating period by making written proposals prior to opening the joint conference, restricting debate to relevant issues and leaving fringe issues and minor disputes to a permanent joint liaison committee of operators and the union.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	87
South	83
Middle West	100
Far West	92
Anthracite	67
Entire industry	90

BY DAILY TONNAGE

50-499	94
500-999	100
1,000-4,999	85
5,000-14,999	83
15,000 and over	100
Entire industry	90

PROPOSAL 7, like Proposal 1, is aimed at cutting the duration of the negotiating period but its method is different, relying on a change in bargaining procedure rather than

a change in the structure of the operators' negotiating committee.

Those who looked with some disfavor on Proposal 7 pointed out that although shortening the wage-

talk period might be a good thing, it would be hard to do because union officials are compelled to go through the motions of waging a tough battle to satisfy their followers that their leaders have not sold them down the river. In fact, one producer contended that the union could make a contract in four days if it really wanted to.

However, the strength of the vote favoring Proposal 7 suggests that a great many operators believe much could be done to speed negotiations. They argue that the faster a contract is drawn up, the better it will be for the industry and its public relations and the better chance there will be of avoiding frayed nerves and bad temper at the bargaining table.

PROPOSAL 8



Opening wage conferences to the press and the public.

PERCENT OPERATORS IN FAVOR

BY REGIONS

North	52
South	74
Middle West	58
Far West	58
Anthracite	0
Entire industry	59

BY DAILY TONNAGE

50-499	67
500-999	50
1,000-4,999	66
5,000-14,999	54
15,000 and over	50
Entire industry	59

PROPOSAL 8, as shown in the breakdown just above, polled fewer favorable votes than any other except Proposal 4. Operators, it seems, prefer some other way of

improving coal's public relations.

Those who opposed Proposal 8 made out a good case. First of all, they fear giving Mr. Lewis a bigger stage for acting out his drama.

Second, they argue that open sessions, with chances for orators on both sides to sound off, would prolong the conference. Finally, they do not want the issues settled by newspaper headlines.

On the other hand, the operators who favored Proposal 8 pointed out that public debate might produce calmer sessions and that, even if tempers do flare up and the actors strut on the stage, the public ought to know what really goes on in wage conferences. Others view the glare of publicity as a possible check on government officials' eagerness to get into the act. Public sessions, they contend, would reveal the true facts to federal officials, the public and even to the miners themselves.

Coal Men and Related Issues

IN ADDITION to registering their opinions on the eight specific proposals listed in last August's "Better Bargaining for Coal," many operators did their own casting about for ways to improve the industry's bargaining position.

Industry-wide contracts were one of the major targets for critics of the present system, although some men who objected to a single agreement for the whole industry conceded that Mr. Lewis probably will bargain on no other basis from now on. Their points, however, are well taken:

1. Each company is the best judge of what it can do for its own employees.

2. Conditions unique to each region, plus the varying character and quality of coals, render an industry-wide agreement unfair to many producers.

3. Small operators often suffer under conditions that permit big companies to make money.

4. It is difficult if not impossible for all segments of the industry to obtain adequate representation.

5. "Captive" operators, being primarily consumers rather than producers of coal, should not play a hand in reaching a contract.

These opinions, it should be pointed out, did not come from any one region or from any one class of operators. They came alike from West Virginia, Illinois, Pennsylvania, Washington and Arkansas and from men whose companies produce small and big tonnages.

Another target for criticism among those replying to *Coal Age's* questionnaire was government meddling in contract writing. The Wagner Act drew a good deal of fire, as did federal "do-gooders" who in past years have crowded into the act and brought the drama to a close, leaving the operators and the public to pay the tab. As one producer said, "Everyone knows there have been a lot of stupid mistakes made in the negotiations . . . during the past 15 years, but I don't suppose end results would have been different because of the very character of the government officials who have always injected themselves into the picture and made a farce of the bargaining." Some fear was expressed also that repeated government intrusion in the conference room eventually would lead to outright nationalization of

all coal—lock, stock and barrel.

Still a third target of criticism by some operators was the negotiating committee itself, though these critics softened the blow by citing contributory causes of failure at the bargaining table—Mr. Lewis' tactics, labor-law restrictions on employers, federal interference and the necessity of reaching industry-wide agreement. Some of those who criticized the present committee suggested that there

What the Operators Agree On

ADDING IT ALL UP, the 81 coal men who answered *Coal Age's* questionnaire voiced a general dissatisfaction with wage-talk conduct in the last 15 years, an uneasiness about the future and a strong feeling that something must be done to give the industry's representatives a stronger lever for wage talks just ahead.

To improve bargaining methods and get better results, a more aggressive and intelligent approach to wage talks seems to be in order. Opinion indicates that some sort of year-round liaison arrangement with the union would be helpful in leading to a better understanding of the problems on both sides. Operators, it is believed, would back such a move, though it would remain to be seen whether Mr. Lewis would meet them halfway.

Operators generally agree also on the need for better public-relations methods, especially during negotiations, which seems to be coal's weakest public-relations spot. Opening wage talks to the press and the public hardly seems to be the answer, but a fairer shake in the newspaper headlines, obtained perhaps through an aggressive public-relations agency geared to these special needs, is a big need.

To bolster coal's bargaining position and to offset the general public's belief that coal operators are moss-backed standpatters, the producers' negotiators should enter wage talks with concrete, negotiable proposals of their own. This, of course, presupposes some thorough studies of the industry's economic position—that is, how many concessions miners can win

ought to be more operating men and fewer sales experts and lawyers on the committee. Others called outright for new faces at the bargaining table, arguing that new men could hardly do a poorer job than those who have been representing the industry.

On all sides, fears were expressed for coal's future unless some satisfactory way is found to make a contract—fear of outright government control, fear of declining public favor, and fear of disaster if the industry is compelled to knuckle under to Mr. Lewis year after year.

without weakening coal's competitive strength—together with some shrewd guesswork about what Mr. Lewis will accept for his miners. Economic research along these and other lines recently was urged by Fred S. McConnell, past president, National Coal Association, who asked for "long-range economic studies which would reveal information upon which intelligent decisions could be made as these problems [of 1949] present themselves" (*Coal Age*, February, 1949).

Some way also should be found to tighten up the operators' negotiating committee—perhaps by reducing the number of representatives and certainly by freeing them, at least in some degree, from interference by groups or individuals with special or selfish interests. "The awkward squad," as the late Mr. O'Neill called the special-interest group, certainly has no useful function in the conference room.

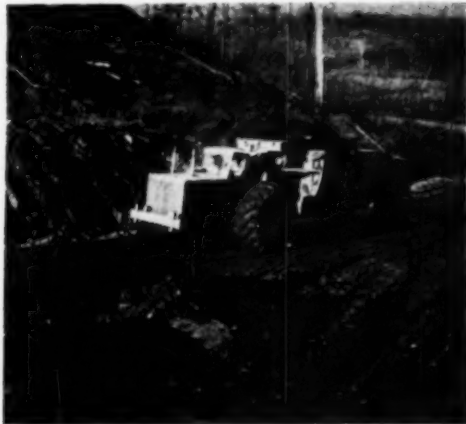
Whether these changes, though wanted by a good many operators, would produce better contracts, better public relations and an easier peace between operators and the union remains to be seen. On this question, there is a good deal of healthy skepticism, accompanied by a desire for a new approach.

The fact remains, however, that coal is a strong industry. There are in the industry a great many men who have confidence in its future and are seeking ways to solve its most troublesome problem—contract relations. As one producer put it, "There are enough fair-minded coal operators to influence a proper approach and negotiations if they would get together and frankly discuss their problems."

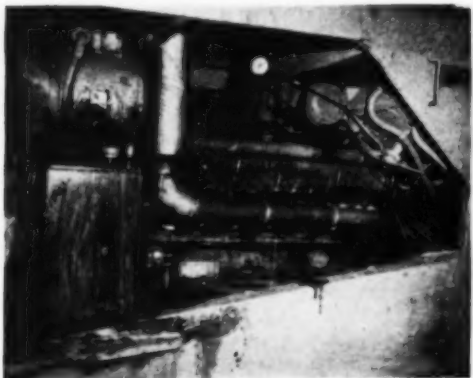
High Load Capacity Backed by Extra Power and Traction as . . .



WITH A FULL LOAD, this new haulage unit is ready to roll at 29.85 m.p.h. on level road.



THE 45-TON HAULAGE UNIT negotiating the 12-percent grade leading to the dump on the upper level.



THE AIRPLANE-TYPE ENGINE in the new unit rated at 750 hp. is more than three times as powerful as most truck engines.



FOUR DIPPERFUL from the No. 11 seam fill this 18- to 20-ton-capacity semi-trailer ready for the trip to the tipple.



TWO-LEVEL DUMP HOPPER at the preparation plant. The upper level is for the 45-ton equipment; and the lower level for the regular semi-trailers hauling 18 to 20 tons.



THIS 13-YD. DRAGLINE removes all the overburden from the No. 12 seam. Electric motors are used to swing the diesel-powered unit. The dragline has a 165-ft.-long boom.



SEVERAL MINUTES are required for the 5-yd. shovel to load the new 45-ton bottom-dumping transportation unit, which can attain speeds up to 29.85 m.p.h. with a full load on a level road.

New Unit Speeds Strip Haulage

Experimental Unit With Dynamic Brake and Airplane-Type Engine Hauls 45 Tons of Coal at Badgett Operation—12 Percent Grade and Muddy Roads Readily Negotiated—Special Crews Drill and Shoot Limestone

A NEW EXPERIMENTAL transportation unit is setting a faster haulage pace by carrying 45 tons per trip at the Badgett Mine Stripping Corp. operation near Madisonville, Ky. An "Electro-tarder" (dynamic brake) is used for braking the unit on the long grades of the haulage road to the preparation plant, reducing the duty on the regular air service brake. Single-tired equipment operates more satisfactorily on the muddy pit roads than dual-tired units.

Airplane Engine Modified

The Model A Roadster Tournapull and E 50 Tournahopper unit, designed by R. G. LeTourneau, Inc., which is taking its turn alongside 12 regular tractor-trailer units, has a capacity of 43 cu.yd. of dirt or 45 tons of coal. Its 12-cylinder Type V-1700 750-hp. "in-line" air-cooled Allison engine operates on butane. This is the same engine used in the P-38 and P-51 planes flown by the armed services during World War II. The engine originally was rated at 1,200 hp. How-

ever, for the operation of the Tournahopper it has been "desouped" by LeTourneau by omitting the super-charger, installing a different camshaft and otherwise modifying the unit, including installing a reconversion-type carburetor to permit it to operate on butane instead of aviation gasoline. The engine is started on vapor and then is switched to liquid butane—a fuel that vaporizes automatically. The capacity of the fuel system is sufficient for two-shift or 16-hour operation. Adding propane to the butane, in the ratio of three butane to one propane, prevents freezing of the butane in cold weather.

Between the Allison engine and the Model 1120 Fuller transmission (five speeds forward, one speed reverse) is a 240-volt a.c. 120-cycle generator. A flux-bridge transformer provides the excitation current for the field of the a.c. generator. The generator, when in use as part of the "Electro-tarder," is employed as an electric brake to avoid using the air service brake on the long grades. By applying an electrical load to the generator through re-

sistors, the revolutions of the driving shaft between the engine and the transmission can be slowed down and the truck's speed retarded.

The Tournapull-Tournahopper unit rides on four 30x33-in. 40-ply tires and is steered electrically through a toggle switch mounted on the instrument panel. The haulage unit can attain a speed of 29.85 m.p.h. with a full load on a level road. At the preparation plant, its load is discharged into a bin on the upper level. To reach this bin the unit must negotiate a 12-percent grade. The driver, however, has never had to use low gear to make the grade. The coal is discharged from the bottom of the Tournahopper, shaped like a half cylinder with the rounded side down, through a full-length door that slides up one side of the compartment.

Single-Wheel Units Preferred

The haulage units at Badgett are single rather than the dual-wheel type because the Badgetts feel that large single tires work better in mud. After one rainy spell, in which the roads in the pits became very muddy, the Tournahopper unit was given a chance to display its power. The unit, carrying the usual 45-ton load, pushed three other haulage units carrying 20-ton loads, out of the pit. The extra traction and power made this feat possible.

Auxiliary Units Step Up Operating Efficiency at Badgett Stripping



PIT-TO-TIPPLE ROADS are kept graded for high-speed operation with two motor-grader units.



HOW ROCK DRILLS are employed to break up the undulated deposit of cherty limestone immediately over the No. 12 Seam.



THE CONSTRUCTION CREW uses a hoist on a truck to pull wooden forms off the foundation for the stone crusher.



ONE OF TWO WAR-SURPLUS HALF-TRACKS being used to help install a 40-hp. motor in a drilling machine.

The Badgetts have been stripping coal in western Kentucky and at this West Kentucky Coal Co. operation since 1944. The land, coal and four-track McNally-Pittsburg washing plant are owned by the West Kentucky Coal Co., Madisonville, Ky. The Badgett Mine Stripping Corp. owns and operates the stripping equipment and also operates the preparation plant. The stripping is double-shifted and about 5,000 tons is mined per day. Last year's production was 1,250,000 tons.

Both the No. 12 and 11 seam are mined by Badgett. The 6-ft. No. 11 and the 4-ft. No. 12 above it are separated by 6 to 8 ft. of limestone. Immediately over the No. 12 is a 6- to 18-in. deposit of cherty limestone, undulated in both directions. Disposing of this deposit is the toughest drilling and blasting problem at the Badgett operation. The remainder of the overburden above

the No. 12 seam consists of 20 to 25 ft. of blue shale and dirt.

A 450-W 13-cu.-yd. Bucyrus-Erie dragline equipped with a Type JS-8 Cooper-Bessemer diesel engine removes all the overburden from the No. 12 seam. Electric motors are used to swing the unit, which has a 165-ft.-long boom. The coal from the Nos. 12 and 11 seams is loaded with either a 4-yd. 54-B Bucyrus-Erie shovel (Buda diesel) or a 3-yd. Model 855 P&H shovel (D-17000 Caterpillar diesel). Most of the rock between the two seams is removed by a 5-yd. 120-B Bucyrus-Erie shovel.

Four Diesels on Dragline

There are also two 5-W Bucyrus-Monaghan draglines on the job. These are equipped with 6-yd. buckets and diesel engines. One unit is equipped with a single-unit Fairbanks-Morse engine. The other

has four General Motors units, all geared to the same drive. Three engines, however, do the work nicely, leaving the fourth as a standby unit which may be started when maintenance work is necessary on any of the others.

Most of the 6-in.-diameter vertical-hole drilling is done by (1) an auger drill powered by a 40-hp. d.c. motor driven from a diesel tractor engine-generator unit and (2) a gasoline-driven Parmanco unit. The holes in each row are on 20-ft. centers. The rows are spaced 20 ft. apart and staggered.

The explosives placed in the vertical holes seldom crack the cherty limestone deposit which lies on top of the No. 12 seam. This results in part from the wavy surface of the deposit. After the deposit is bared, it is necessary to send in a special drilling crew with rock drills (drifters) to drill and shoot the formation. Two special D-6 and D-8



BACKFILLING the foundation for the new limestone crusher with a bulldozer. Engine covering carries heat to the operator.



H. A. Tedder (left), superintendent; and Judson Jarrells, drilling and blasting foreman, holding one type of drill bit used.



Rogers Badgett (left), president (charge of operations), and Russell Badgett Jr., charge of rock-crushing plant.



Bentley F. Badgett (right), business manager, and C. W. Badger, preparation superintendent.

self-contained Caterpillar-mounted drill units, consisting of two Cleveland or Gardner-Denver drifters supplied with air from Worthington or Gardner-Denver compressors, are assigned to the work. The 1 $\frac{3}{4}$ -in. holes are spaced on 5-ft. centers and are drilled through to the coal.

Overburden yield runs 3.1 to 3.5 cu.yd. per pound of explosive. Hercules Coalex A (4x24-in.) and American Cyanamid semi-gelatin 3B (1 $\frac{1}{2}$ x8-in.) and caps are used. American Cyanamid 50-C (3x16-in.) is used in the horizontal holes.

Four of the 12 trucks previously mentioned are Type 25FDT Euclids; the other eight are Type 43 FDT. Nine are equipped with Type 58-W semi-trailers (18 to 20 tons) and three are supplied with Type 72-W 20-ton semis. The Type 25-FDT Euclids have 150-hp. Cummins diesels and the Type 43FDT units are equipped with Model 671 200-hp. General Motors diesels. Each

truck has two 11.00x24-in. 14-ply and four 21.00x24-in. 20-ply Good-year or Firestone tires. A Type 49FD 15-ton Euclid with a rear-dump body hauls gob from the tippie.

Auxiliary Equipment Varied

Other pit units include a Type HD-19 Allis-Chalmers tractor with Baker blade and three D-8 Caterpillar tractors equipped with Le-Tourneau blades. The roadways are graded with a Model AD-4 Allis-Chalmers motor grader equipped with a No. 471 General Motors diesel and a No. 12 Caterpillar unit.

Two war-surplus half-tracks equipped with 160-hp. White motors are giving good service at Badgett. One is equipped to do crane work and the other carries a 1,250-gal. tank of diesel fuel for field-refueling service.

About 15 Willys jeeps are used in and around the Badgett operation. These cars are made available to the supervisors at a "good price" to encourage them to take an interest in maintaining the jeeps. The company furnishes the oil and gas and the jeep owners use the cars both on the job and at home.

At the time this article was being written, a Size 50-50 New Holland stone crusher was being installed to grind limestone from the pit for surfacing the haulage roads.

The supervisory and operating personnel at Badgett are as follows: Rogers Badgett, president (charge of operations); Russell Badgett Jr., charge of rock-crushing plant; Bentley F. Badgett, business manager; H. A. Tedder, superintendent; C. W. Badger, preparation superintendent; Judson Jarrells, drilling and blasting foreman; and M. B. Newson, master mechanic.



HOW THE SODIUM-VAPOR UNITS illuminate the empty yards at Old Ben No. 9 (left) and Old Ben No. 8.

Safety Steps at Old Ben No. 9

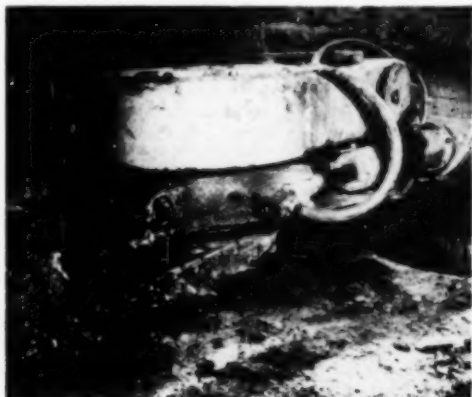
Sodium-Vapor Lights Promote Yard Safety—Dust Underground Reduced by Water Sprays on Cutter Bars—Precast Concrete Slabs Insure Good Roof Support—Trolleyphones Reduce Transportation Hazards

SODIUM-VAPOR LAMPS for yard lighting, water sprays for allaying cutter dust, steel-and-concrete-slab timbering for bottom and shops, and trolley phones for better dispatching are important safety measures that are paying off at the newly re-equipped No. 9 mine, Old Ben Coal Corp., West Frankfort, Ill.

"Look Out" or "Watch Out" have little meaning for the person to whom those words of warning are directed unless that person sees or senses what should be done to avoid the hazard. Good lighting plays an important role under such circumstances. Sodium-vapor lamps installed on the surface at Old Ben

Nos. 8, 9, 11 and 15 mines are helping the men who switch the railroad cars to "look out" for themselves and the other fellow too.

Some 66 Type M-2 Cat. No. A80G38 General Electric sodium luminaires are in service at the Old Ben mines. Most of the units are installed over the empty and load yards. Each lamp is rated at 10,000 lumens and is mounted 28 ft. above the rail on a 35-ft. pole. The 220-watt units are of the high-power-factor type, operate on 120 volts a.c. and are spaced 100 to 125 ft. apart. There were no lamp failures during the first year's operation. The rated life of the lamp



THE SPRAY from a single high-pressure nozzle is sufficient to trap the dust in cutting.



SODIUM-VAPOR LIGHTING INSTALLATION in the loaded yard at Old Ben No. 9.

is 8,000 hours on steady service and 4,000 hours on intermittent service. The saving in power consumed by a sodium-vapor installation over that required by an incandescent installation of the same light intensity will pay for the sodium-vapor installation in 10 to 12 years.

The men on the night shift are eager to tell visitors how much they like to work under this type of illumination. The casual visitor finds the sodium-vapor light more to his liking the longer he stands in it. The light is particularly effective in fog and smoke. A day-shift hoisting engineer at one mine was changed to the second shift. He declared that he could not hoist coal after dark because he could not see the cage *pass* the ground landing. A sodium-vapor light was installed near the shaft opening and no more

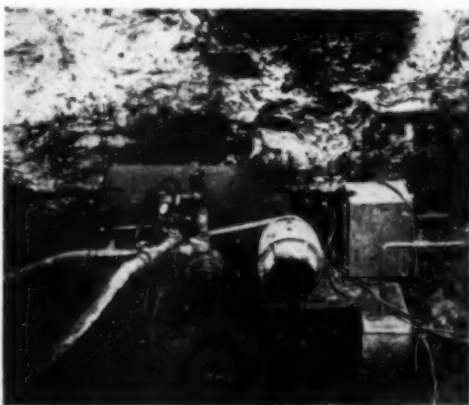
complaints were heard. With the light he could readily see the cage.

The sodium-vapor lamp consists of an evacuated tubular bulb enclosing at each end a coiled tungsten filament (the cathode) and a sleeve of molybdenum (the anode). Each cathode is coated with an active material that gives off electrons freely when heated. Each anode is connected to one side of the respective filament coils and acts as a collector during the half cycle when that end of the tube is positive with respect to the other. A small quantity of sodium, and also neon at a few millimeters pressure (for starting), are included in the bulb. The heat insulation necessary for vapor lamps is furnished by a separate heat-resistant double-walled flask which encloses the lamp during operation.

To operate the lamp, each cathode is first supplied with 6.6 amp. at approximately 2.5 volts. This is accomplished by shorting out the arc by a timing relay. After a short preheating interval, the arc potential is applied across the anodes. This usually is accomplished through a timing device operated by a bimetallic element. After opening the circuit, the relay is held open as long as the unit is in operation. When the voltage is first applied across the electrodes, the lamp glows with the characteristic red neon color. As the temperature rises and the sodium vaporizes, the discharge gradually acquires the orange-yellow of the sodium arc. The maximum luminous output is reached in about 30 min. The lamp does not require a cooling period for re-establishment of the arc following a power interruption.

In the field of dust control, high-pressure sprays were installed at the underground rotary dump station at the new No. 9 C shaft late in 1947 (*Coal Age*, December, 1947). Fourteen high-pressure flat and solid-cone nozzles were arranged to trap the dust released when the coal was dumped from the 7-ton cars into the 7-to. skips. Compound M-treated water was piped to the sprays at a pressure of 75 to 100 lb. The installation proved an aid to both health and visibility.

Other sprays now are used to alloy cutter-bar dust at the face. One 0.062-in.-diameter stainless-steel solid-cone nozzle, mounted slightly above the cutter chain and opposite the drive sprocket on each 10 RU rubber-tired cutter, effectively kills the dust. While the machine is undercutting the face, a



HOW THE PUMPING EQUIPMENT is arranged in the back heading for supplying water to the section at 80 to 100 lb. pressure.

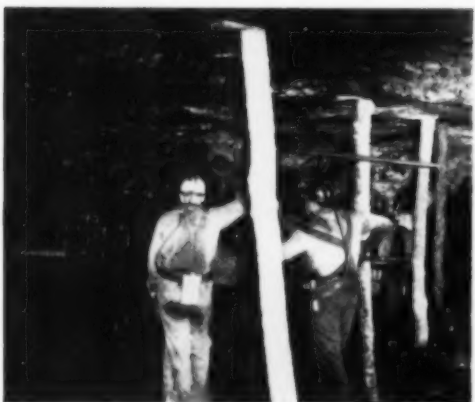
Special Equipment and Timbering Promote Safety at Old Ben



WITH AIRPLANE-TYPE DISK BRAKES recently added, the shuttle-car operator need not plug the motors to brake the car.



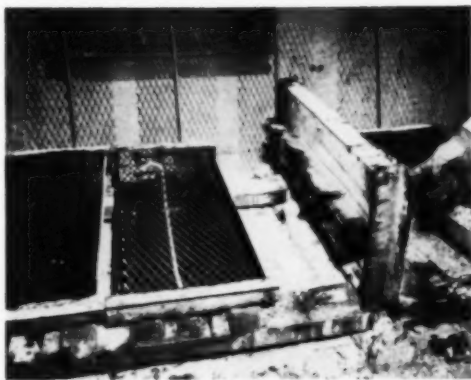
POST-MOUNTED DRILL UNITS (three units to a crew) are operated in dust-free air and are moved on an electrically-driven truck.



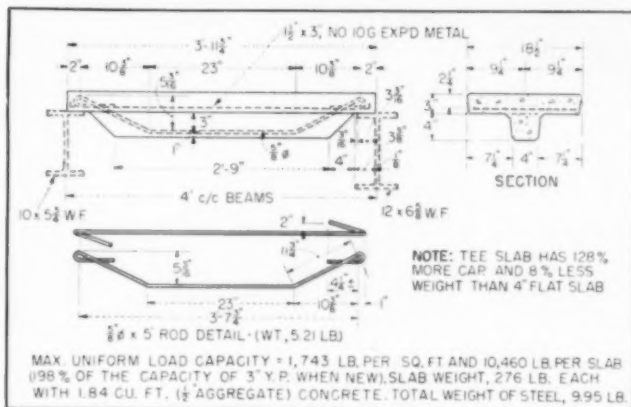
THE DRILLERS ON THE LEFT provide coal for the robbing unit on the right.



TYPICAL SAMPLES of the kind of main-line timbering jobs done at the C-Shaft operation, Old Ben No. 9.



HOW THE PRE-CAST REINFORCED CONCRETE SLABS extensively used for timbering at Old Ben No. 9 are molded, and how they look after being installed in the ceiling of the underground shop.



CONCRETE-SLAB roof support used between H-beams

fine but forceful spray of water is released at a pressure of 80 to 100 lb.

Allaying the cutter-bar dust has speeded up face-cycle operations. Drilling for air shooting is a serious bottleneck at many mines because more and larger diameter holes are required, compared to shooting with explosives. Furthermore, drilling in a room already filled with dust is not conducive to improved worker efficiency. When the drill crews at Old Ben follow the cutting crews, they are not handicapped by air-laden dust as in the past.

Each panel territory is equipped with a Model F4T Aurora turbine-type pump for pumping the water and maintaining the pressure. Water is piped to the room-necks in 1-in. pipe joined with Vitaulic self-aligning couplings. A 790-gal. portable water tank is stationed along-

side the turbine pump during the working shift and is refilled at the shaft bottom on the third shift.

Room-and-Pillar Plan Used

The mining of the 8- to 9-ft.-thick No. 6 seam at Old Ben is by the room-and-pillar system with panels approximately 600 ft. square. The panels are developed by a pair of entries in the center with 14 rooms off each side 250 ft. long and 30 ft. wide on 45-ft. centers. The panels, in some instances, are worked retreating. Under the retreating method, after a group of rooms have been worked out by the 14-man production crew (exclusive of faceboss), the crew is moved out and a 9-man robbing crew (exclusive of faceboss) takes its place. Robbing includes driving additional crosscuts and, in some instances, the slabbing of pillars. Recovery

runs nearly 60 percent of the area mined.

There are ten mechanized mining units distributed over five sections. The trackless equipment at the face includes 10 RU cutters and 11 BU loaders served by Type 5SC-1E-4E 7-ton cable-reel shuttle cars. A Goodyear airplane-model disk-type brake, illustrated in this article, has been installed on the shuttle cars. It eliminates the need for braking through plugging of the motors. One shuttle car serves a loader until the rooms are about half finished and then a second shuttle car is started.

Special Trucks Move Drills

Post-mounted Model 574 Chicago Pneumatic permissible drills are used on most of the sections. Three drillers are required to keep one Joy loader in coal. The drills are transported on home-made electrically-driven rubber-tired trucks. On the robbing sections, two drillers use a special truck chassis carrying C-P drills mounted on Dooley arms.

The coal is broken down by Airdox. Five electrically-driven Airdox compressors with 50-hp. motors, installed on the surface in a building near the shaft, furnish air at a pressure of approximately 10,000 lb. for breaking down the coal. The air is piped underground to the working territories in high-pressure lines and one crew member in each section is assigned to the breaking job.

The 7-ton shuttle car discharges into 7-ton mine cars at the room necks through an elevating boom that eliminates the need for any special transfer station or equipment. The 7-ton Watt steel cars are 48 in. high, 14 ft. 10 in. long over the



Nick Zander, main-line motorman, talks with John Sharknas, mine manager at the dispatcher's desk at the shaft bottom.



TROLLEY-WIRE GUARDS are employed as effective precautionary equipment at numerous locations at Old Ben No. 9.



Glyn Holada, face boss, robbing crew (left); Frank Eubanks, maintenance engineer; and James Sneddon, state inspector.

Ohio Brass automatic couplers, and 78 in. wide. The wheel base of the car is 66 in. and all cars are equipped with Timken roller bearings.

The bottom at Old Ben No. 9 is timbered extensively with 18-in.-wide by 4-ft.-long pre-cast reinforced concrete slabs laid on H-beams. Slab details, as well as some installations on the main line and in the shops, are shown in the accompanying illustrations. The reinforcing consists of a sheet of expanded metal wire mesh and a $\frac{5}{8}$ -in. reinforcing rod bent to reinforce the drop section. The slab is dished down for added strength as shown in the diagram. The H-beams, on 4-ft. centers, are supported on concrete blocks and the slabs are installed lengthwise between pairs of beams across the entire width of the heading, completely sealing the top and assuring long trouble-free life.

The slabs are poured with ready-mixed concrete in some 90 steel molds in a building at the mine. The

building is heated and slabs are made the year around. A new batch of slabs is poured every three days as a rule.

Phone System Aids Dispatching

The installation of trolleyphones on the main-line locomotives and at the dispatcher's desk at the shaft bottom has done much to promote safety and efficiency. The danger of collisions on the main line is virtually eliminated. Dispatching can be controlled almost to a split second. The entire operation seems to click better now that the phones keep the motormen informed of every move on the main line.

This "Femco Trolleyphone" system, called "the radio" by the motormen, is manufactured by the Farmers Engineering & Mfg. Co., Pittsburgh, Pa. In the operation of the sets, the voice is transmitted by a frequency-modulated carrier current traveling over the d.c. trolley and feeder wires. Use of frequency instead of amplitude

modulation greatly reduces interference and conversation can be maintained in spite of leaky insulators, sparking brushes and arcs. It is not unusual to be able to talk over a trolley wire that has an open section switch.

Officials of the Old Ben Coal Corp., with headquarters at 230 South Clark St., Chicago, are: D. W. Buchanan, chairman of the board, and George F. Campbell, president. In the operating office at West Frankfort are: R. L. Adams, vice president in charge of operations; Ernest E. Greene, assistant to the vice president in charge of operations; Howard Lewis, general superintendent; Ed. R. Lutz, superintendent of plants; J. W. MacDonald, chief engineer; John E. Jones, safety engineer; George A. Strunk and Hollis Pierce, electrical engineers; and Frank Eubanks, maintenance engineer. In the operating department at the new No. 9 mine are: John Sharknas, mine manager, and Nick Kovaleski, mine electrician.



PURCHASE CORRECT-CAPACITY BATTERIES for best results. A too-large battery wastes money, while one too small for the job repeatedly over-discharges, which results in shortened battery life and consequent false economy.

Storage-Battery Maintenance

Properly Selected Storage Batteries Correctly Charged and Maintained Insure Maximum Life and Efficiency in Haulage Units—Periodic Inspection and Accurate Records Vital to Success

By K. A. VAUGHAN

Manager, Field Engineering, Gould Storage Battery Corp., Trenton, N. J.

NO OTHER ELEMENT in battery haulage is as vital to economical operation as the storage battery itself. Although comparatively simple, the care and maintenance of these portable "power plants" are of utmost importance if maximum battery life and most efficient operation of underground haulage equipment are to be realized.

Careful attention to eight general rules will keep most batteries in prime operating condition and insure maximum battery life. In summary, these are:

1. Buy batteries of the correct capacity.
2. Keep batteries clean.
3. Check electrolyte level at regular intervals.
4. Charge batteries correctly.
5. Make periodic inspections.
6. Keep accurate records of all activities.

7. Keep the battery charged when not in use.

8. Repair when necessary.

CORRECT CAPACITY — Obviously, purchasing oversized batteries is wasting money. Likewise, buying a battery that is too small for the job is equally false economy. Too small a battery results in repeated over-discharging which decreases battery life.

In estimating battery capacity, the ampere-hour or kilowatt-hour capacity needed for each shift should be considered as 80 percent of the actual requirement. Thus, ample surplus capacity is assured. If necessary, battery or equipment manufacturers' representatives should be called upon to determine more closely the existing demand.

An insufficient supply of batteries or inadequate charging

equipment also can result in over-discharging and a corresponding decrease in battery life. As a guard against an insufficient number of batteries, approximately two batteries per unit of equipment can be considered the minimum requirement for three-shift operations, provided available charging equipment can recharge each battery in eight hours.

CLEANING—Keep the battery clean and dry. In underground service, battery connectors and cell covers accumulate dust and dirt. These, upon becoming dampened by acid, result in short circuits and grounds which can lead to damage of batteries and other equipment. Therefore, the battery should be cleaned regularly. This can best be done by washing the battery with water and blowing off excess water with compressed air. Periods between cleaning can be determined by observation. In other words, when a noticeable quantity of dirt accumulates, the battery should be cleaned. Some mines liberally sprinkle a solution of soda ash over the top of the battery to neutralize any acid that may be present.

At the time the battery is cleaned, observe the condition of the steel tray. If a break has occurred in the acid-resistant covering ma-

Systematic Inspection and Care Assure Top Battery Performance



KEEP BATTERY CLEAN. Frequency of cleaning depends on operating conditions and varies from once a day to once in several months. Water-washed batteries should be thoroughly dried.



CHECK ELECTROLYTE LEVEL and add water at regular intervals. Use of distilled or manufacturer-approved water once every one or two weeks is sufficient for full-cycle operations.



CHARGE BATTERIES PROPERLY. Strict adherence to manufacturers' instructions is a must for maximum battery life and efficiency. Batteries not in use should be kept fully charged.



MAKE PERIODIC INSPECTIONS. Specific gravity and voltage of each cell should be checked at least every three months, preferably once a month. Make necessary repairs without delay.

terial and corrosion is evident, clean off the corrosion and paint with an asphaltic acidproof paint or melted battery-sealing compound.

ADDITION OF WATER—Water must be added to all cells periodically to replace that lost by evaporation. The periods between additions must be established by experience. In any event, the electrolyte should never be permitted to fall below the perforated hard-rubber baffle covering the separators, or to rise higher than

the high-level mark. Addition periods never exceed once a week. When there is a tendency for the electrolyte to escape through the vents during charging or operation, too high an electrolyte level is indicated. If any one cell consistently requires more water than the others, or if at any time a cell's electrolyte level is particularly low, a broken leaking jar is indicated. Broken jars should be replaced immediately. When the jar is out of the tray, acid remaining in the tray should be washed out and the tray dried before the cell

is replaced. Only distilled or manufacturer-approved water should be used.

When it is necessary to add water to the battery, it is advisable to do so immediately before charging so that the subsequent charge will mix the water with the electrolyte.

CHARGING — Improper charging is one of the most prevalent avoidable abuses of storage batteries. As the subject is quite broad, no attempt will be made in this article to cover charging be-

Day Operator _____ Night Operator _____ Date _____

[illegible]

yond advising strict adherence to the instructions of the haulage-equipment, battery and charging-equipment manufacturers.

RECORDS—One of the best methods of controlling battery maintenance used is the daily battery-record system, as follows:

- to which the battery is assigned.

3. When a battery is returned to its charging station, read and record specific gravity and temperature, record the time, and record the setting of the ampere-hour meter, together with a note as to whether water was replaced or not.

A quick glance at a chart containing this information tells the supervisor the following:

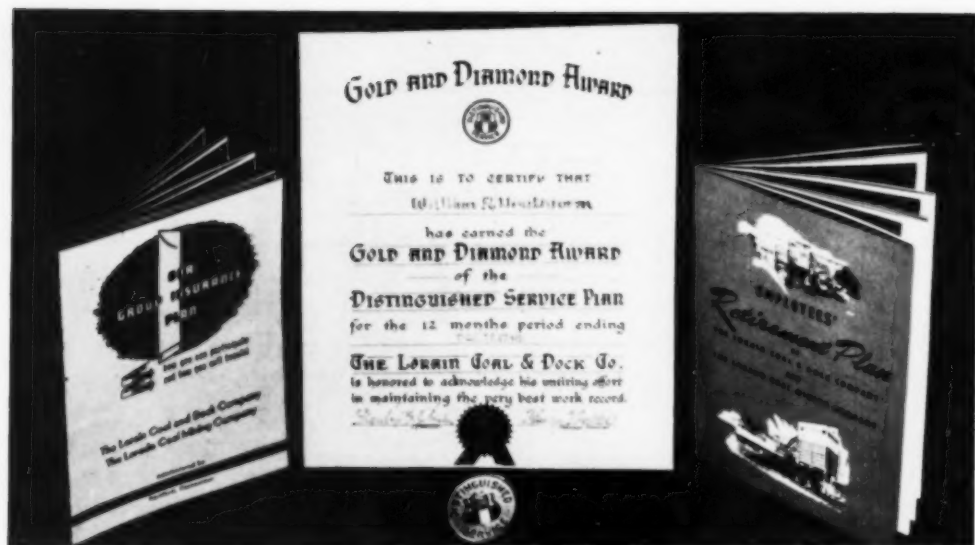
- ## CHARGING BATTERIES WHEN

NOT IN USE—During long periods of inactivity, batteries should be checked monthly and kept fully charged. Those batteries that do not remain fully charged should receive a freshening charge.

REPAIR POLICY — Repairs should be made as soon as a defect is known. Batteries with either broken covers or broken jars should not be continued in operation.

After a cell is repaired, it should be filled with electrolyte of a specific gravity equal to the average of the other cells in the circuit and given a charge to make up for any loss that occurred when the element was exposed. Spare cells are sometimes advisable. If on hand, the spare cell may be installed in the battery while the defective cell is being repaired. Also, the repaired cell can be given a complete charge and the acid adjusted to the correct value before the cell is replaced in service.

Another important point in the care of storage batteries is to be sure that at least one person engaged in maintenance operations is well versed in battery technology. Battery maintenance should then be placed under his direct charge and no unauthorized employee permitted to service batteries.



DISTINGUISHED SERVICE awards for attendance, insurance and pensions are headliners in . . .

Rewarding Coal-Mining Merit

Personalized Awards for Loyalty and Achievement Pay Dividends to Men and Company—How Lorain-Lorado Rewards Merit, Boosts Morale and Improves Community Life—Pension Plan and Insurance Spark Broad Program

By **HARRY C. WALTER**

Personnel Manager, Lorain Coal & Dock Co., Columbus, Ohio.

IN TODAY'S mass-production age, very few of us produce something in its entirety. Instead, most of us contribute only a certain part to the completed operation. The opportunity for monotony in our jobs therefore is much greater today than when each craftsman was completely responsible for what he produced.

Monotony destroys interest and lack of interest breeds absenteeism, turnover and mediocre job performance. We believe that individuals still want to have pride in their accomplishments and that they have a very natural desire for special recognition beyond their regular remuneration. We believe also that each job classification in our organization is an important one and can be interesting to the right

type of employee if we make the proper incentives available to him.

Through our Distinguished Service Plan, our company magazine, (the *Lorain-Lorado Journal*), our Employees' Retirement Plan and in various other ways, those who remain in our employ, those who work every available working day and those who do an efficient job receive special recognition beyond their regular remuneration.

Awards for Steady Work

These additional rewards for a job well done have developed gradually over a period of years. During the war years our companies, like others whose products were essential to the war effort, were faced with many problems which had to

be solved to meet the demands for increased production. Manpower was our biggest problem. Many men in our mining communities joined the armed services, which meant fewer men available for coal mining. This manpower shortage and the great expansion in all industries heightened the competition for the remaining skilled and experienced men.

With these factors in mind, our companies inaugurated the Distinguished Service Plan in January, 1943. Its purposes were twofold: to encourage our experienced and trained men to remain in our employ and to urge them to be on the job every available working day.

The basic idea behind this plan was a system of increasing awards for regular on-the-job attendance to encourage our men to seek the higher awards. These awards were made on the following basis:

An employee who reported for work every available working day for two consecutive pay periods (one month) received a Bronze Distinguished Service Pin; for six consecutive pay periods (three months), a Silver Distinguished Service Pin and a white miner's safety hat; for 12 consecutive pay periods (six months), a Gold Dis-



FOREMEN SILVIA AND GARBACK win awards from President Johnson (left) as Safety Chief Gettings (right) looks on.



BALL TEAMS for miners and boys, skeet clubs, picnics and holiday parties are the lighter side of a well-rounded employee-recognition program.

tinguished Service Pin and a silver shank 10-karat gold ring; for 24 consecutive pay periods (one year), a Gold-and-Diamond Distinguished Service Pin and a \$1,000 life insurance policy on which the company paid the premium each year the Gold-Diamond Award was won.

Interpretations of the provisions of our Distinguished Service Plan have always been as liberal as good management practices permit. For instance, an employee is not penalized because of industry-wide work stoppages and, if local management is informed at least one day in advance, he is not penalized if excused for a valid reason.

Meanwhile, some of our employees, as well as sons and daughters, were joining the armed services. At the peak, nearly 400 Lorain-Lorado men and women were serving their country in various parts of the world. A continuous flow of personal correspondence was maintained between those in the armed services and Stanley B. Johnson, our president. More than 3,000 of these letters were received and answered during the war years. Easter, Fourth of July and Christmas holiday parcels containing assortments of useful and edible items were sent to those in uniform throughout the war.

Chiefly to keep our service men and women posted on happenings at the mines and in their home communities, we instituted the *Lorain-*

Lorado Journal in June, 1943. This tabloid-sized newspaper was mailed monthly to all our men and women in the armed forces and also was distributed monthly to all our employees through the payroll offices. The *Journal's* popularity grew with each issue. In addition to news from home, we published letters from those in the armed forces, thus keeping those at home informed of their experiences and keeping those in uniform in touch with each other.

Magazine Spurs Interest

When hostilities ceased, the continued interest in our *Journal* convinced us that it had become an important and permanent part of our organization. Because of changing conditions, the subject matter necessarily took a different slant and with the June, 1946, issue the style also was changed from the original tabloid-size newspaper to the present magazine-type publication.

Although conditions are somewhat different now from what they were when the *Journal* first was published, today, after over 5½ years, it serves as an important medium for keeping our employees informed. Every effort is made to publish straightforward material about company policies, company progress, the coal industry, industry in general and world affairs.

The *Journal* also provides an ad-

ditional means of giving well-earned recognition to members of our organization. For example, each month we publish a list of current Distinguished Service Award winners, photographs of the highest production crews at each of our mines and pictures of our employees demonstrating proper safety practices. In addition, we devote a page to "Familiar Faces," consisting of photographs and biographical material describing employees with long service. In articles describing new equipment, we make a special effort to feature those who build, install or operate it.

We also publish feature stories and photographs about those who win special awards or take part in coal-mining activities, about promotions, about various departments and the part each plays in the total operation, and about many other examples of employee achievement.

Recognition in our *Journal* is not confined to coal mining alone. We maintain close contact with and interest in the activities and achievements of the families of our employees and publish articles about the parts they play in civic, church and service organizations. Stories about athletics, social activities, hobbies, playground activities, school events, etc., also appear regularly in the *Journal*.

Though the *Journal* is published for our employees, there are many

Merit Awards, Insurance and Pensions Spark Lorain Program

others who find it interesting and have asked to receive it. In addition to those distributed among our employees, about 400 copies are mailed each month from our Columbus office to six foreign countries, 28 states and the District of Columbia. These go to our people in the armed forces, many of our customers, our stockholders, labor leaders, coal associations and other mining companies, members of Congress and representatives of both state and federal governments, mining schools, former employees who have moved away but desire to keep in touch with their friends at our operations, and to railroads and publications of other companies.

Insurance Plan Installed

During the transition period to peacetime conditions, it became apparent that some of the original Distinguished Service Awards, which were inaugurated in 1943 and had served so well during the war years, had begun to lose significance in favor of greater insurance benefits. In view of this trend, on Nov. 1, 1945, we put into effect a group life, sickness, accident and hospitalization insurance plan and made it available to our Gold-Diamond Award winners.

Because men released from military service had less chance of obtaining the year's perfect attendance necessary for the Gold-Diamond Award, it was ruled at the time the program was established that returning servicemen would become eligible to participate in the group insurance plan when they won the Silver Award, provided they returned to work within nine months after their discharge and qualified for the Silver Award within one year of the date of their re-employment. For those who elect to participate in this group insurance plan, our companies pay more than half of the total premium cost, the remainder being deducted from the employee's pay.

On Nov. 1, 1947, the hospital and surgical benefits under this plan were increased without additional cost to those insured. The major benefits under this plan include the following:

Death benefit: \$1,500 will be paid to the insured's beneficiary in the event of death from any cause while this insurance is in effect.

Permanent and total disability benefit: If the insured becomes totally disabled before his 60th birthday and while his insurance is in effect, and if he remains disabled

continuously until the date of his death, \$1,500 will be paid to his beneficiary provided proof of total disability is submitted periodically.

Accidental death or dismemberment benefits: Losses resulting from bodily injuries effected directly and independently of all other causes by an accident suffered either at or away from work, and within 90 days from the date of accident, are paid for as follows:

Accidental loss of life (in addition to life insurance)\$1,500

Accidental loss of sight of both eyes, both hands, both feet or any two mentioned members1,500

Accidental loss of one hand, one foot or the sight of one eye....750

Accident-sickness benefit: Weekly \$20 payments from the first day of disability due to a non-occupational accident and continuing during disability for a maximum of 26 weeks for any one disability; same payment from the eighth day of sickness not covered by workmen's compensation. No limit on the number of sickness-accident periods within a year except that no worker 60 or over may get benefits during any 12 consecutive months for more than a total of 26 weeks.

Daily hospital benefit: The insured will be paid \$6 per day, up to a maximum of 70 days, during any one period of disability. While each disability carries the 70-day limit, the number of such periods of disability during any year is not limited.

Hospital fees: The hospital may charge for necessary services and supplies, other than the charges for bed and board, during hospital confinement. If so, the insured is reimbursed for such charges (including any charge for ambulance service, whether or not charged by the hospital) up to \$60 for each period of disability.

Surgical fees: A list of operations incorporated in the insurance indicates the maximum amount of reimbursement that will be paid for each fee charged by the surgeon. This benefit is paid regardless of whether the operation is performed in a hospital or elsewhere. It is possible that during one period of disability the insured might need more than one of the operations listed. In any case, the maximum reimbursement for all operations during one period of disability is \$187.50.

On Jan. 1, 1947, further additional benefits were announced for Gold-Diamond Award winners. Prior to that time, those who received the \$1,000 life insurance poli-

cy as part of the Gold-Diamond Award had the premium paid on their insurance for each year the award was won. Under the new plan, which replaced the previous insurance, once an employee has won the Gold-Diamond Award, the company pays the full premium on his life insurance (now designated as Honor Insurance) as long as he remains in the employ of our company. In addition, this Honor Insurance increases with each year the Gold-Diamond Award is won. One-year winners are insured for \$1,000. The death benefit of this insurance increases \$500 each year a Gold-Diamond Award is won until a maximum of \$3,000 is reached. No physical examination is required for this Honor Insurance, so that these benefits are available to all Gold-Diamond winners, whatever their health.

During the last three years, our employees have received a total of over \$40,000 in benefits under these plans. These benefits are particularly appreciated because they usually come at an opportune time to help defray unexpected expenses.

With these increased insurance benefits for Gold-Diamond Award winners established, the Bronze, Silver and Gold Awards were discontinued as of Dec. 31, 1948.

Big Group Wins Awards

That the Distinguished Service Plan has been a success is proved by the number of our employees who have won awards during the six years it has been in operation. Of the men now employed at our mining operations, about 75 percent have won awards. Probably even more significant is the fact that over 33 percent of the men now in our employ have earned the one-year Gold-Diamond Award. There are 179 men in our employ who have won the award twice, 110 who have won it three times, 72 who have earned it four times and 46 who have earned it five times. Many of these men are in key positions, with special skills or responsibilities, and it is therefore a special advantage to have them remain in our employ.

Every effort is made to personalize each award. When a man wins an award, the personnel manager sends him a congratulatory letter. He also is given a framed diploma-type certificate, which is signed by the president of the company and the personnel manager. In addition, the names of all award winners are featured prominently each

month in our publication, the *Journal*. Once a year, banquets are held at our various mining operations to honor the Gold-Diamond Award winners. These banquets are primarily social gatherings but they help stimulate interest in the plan and create good fellowship among members of the organization.

Men and Company Gain

In its operation, the Distinguished Service Plan has proved of benefit to our companies as well as our employees. For the company, the plan has the important advantage of encouraging on-the-job attendance, thereby increasing operating efficiency. It also tends to reduce labor turnover, especially among the most valuable class of men, those who are on the job every day.

There also are intangible benefits to this system of awards for faithful attendance at work. The very fact that there is such a system of awards informs each man that his presence on the job is noted and appreciated and that it will be rewarded. Such an incentive may persuade a man to report for work instead of taking the day off. With a system of progressive awards, the incentive becomes greater with time, thus helping to promote habits of regular attendance.

Employee recognition in our companies takes other forms, too. Each year a member of our sales department who shows the most progress for the year wins the president's Sales Award. Each year also the foremen at each of our mines whose crews attain the best safety and production records of the year are presented with the president's Safety-Production Awards. In addition to these awards, last year the winning foremen from our eastern Ohio operations were given an opportunity to attend the All-Ohio Safety Congress and winners from our West Virginia operations were sent to the annual convention of the Mine Inspectors' Institute.

We believe it is helpful to the whole organization for those in one department to understand the problems of other departments. For this reason, we make it a point to have a group from our mines attend our annual sales meeting and to have members of our sales department make visits to our mining operations at opportune times. We also bring groups from our mines to attend the Mining Congress each year.

From a recreational standpoint,

we sponsor luncheons, parties and picnics for our employees and cooperate in sports programs. One example of this is the Buffalo Recreation Project at our West Virginia operations, a cooperative organization supported by the coal companies in that district. It sponsors Girl Scout and Boy Scout troops and activities and provides a Scout camp and a swimming pool. This project also organizes softball leagues and playground programs during the summer months.

For a number of years, we have mailed a birthday card to each of our employees and we visit those who are absent from work because of illness or injury, offering assistance where possible, particularly in compensation and insurance benefits.

When the trend in the coal industry turned toward pensions, we began to investigate the possibilities in this respect. We made an analysis of many plans then in effect and obtained as much professional advice as we could on this subject. After considerable thought, we developed a plan which we sincerely believe is fairer and more liberal than any of those we examined.

As of July 1, 1948, we inaugurated the Lorain-Lorado Employees' Retirement Plan for all employees who are not in a group to which our companies make payments under a labor contract or agreement to provide pensions or welfare benefits. Thus, in effect, every member of our organization will be eligible for a pension benefit, either as a member of a group to which our companies make payments under a labor agreement or as a member of our own Lorain-Lorado Retirement Plan.

Two of the chief features of this plan are that there is no cost for those who make less than \$5,000 per year and that the basic allowance received upon retirement is financed entirely by our companies.

Credit for all previous years of service with our companies is counted, provided this service was continuous. Normal retirement age is 65, with at least 10 years' service at that time. Early retirement is available at 55 after 20 years' service or regardless of age after 30 years' service. Those who retire before 65 may choose either to have their basic retirement allowance begin when they reach 65 or to receive a reduced amount beginning at the time they retire.

The basic retirement allowance for normal retirement with 20 years' service is one-half the annual

base compensation for the year preceding retirement, provided this was less than \$2,400 per year, not including overtime and special pay. If a man retires normally with less than 20 years' service, the basic allowance is reduced by 5 percent for each year less than 20. If he retires with more than 20 years' service, his allowance is increased by 2 percent for each year of service over 20.

Men whose annual base compensation for the year preceding normal retirement was \$2,400 or more have an annual basic retirement allowance of \$1,200, with a reduction of \$60 for each year of service less than 20 or an addition of \$24 for each year of service over 20.

Normal retirement for those who earn over \$5,000 per year contains a provision whereby they may increase the amount of their allowance by making payments into the fund. To those who choose this feature, our companies give an additional credit for their years of service before the plan went into effect.

Pension Benefits Flexible

A retiring member may provide for a portion of his retirement allowance to be paid after his death following his retirement to any beneficiary he names. In this matter, he has two options. Under Option 1, he will receive a reduced retirement allowance during his life, with continuing payments in the same amount after his death to and during the life of his beneficiary. Under Option 2, he will receive a reduced retirement allowance during his lifetime, with one-half of this amount being paid to and during the life of his beneficiary.

The payments retired employees receive under this plan are in addition to and entirely independent of any benefits they receive under the Federal Social Security Act as it existed under the effective date of our plan.

Hardly enough time has elapsed since installation of our plan to offer any concrete results. However, during the installation of the plan, each eligible employee was interviewed personally. From these interviews, we have been led to believe that the benefits offered by the plan were very well received. We feel that this probably is the most important step we have taken in recognition of those who render long and faithful service with our companies.



DUAL WASHING and dewatering circuits improve preparation efficiency at Maid Marian mine. The screen units are located in line with the wash boxes, resulting in a definite saving in sluice water over that required for curved troughs.

Maid Marian Preparation

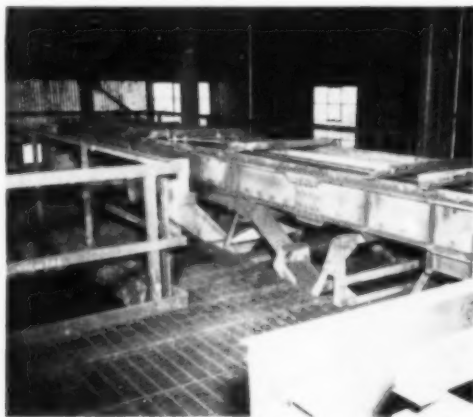
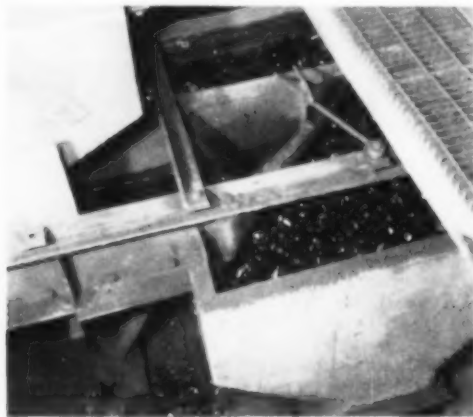
Dual Washing and Dewatering Circuits Raise Efficiency at Central Indiana Operation—New-Type Oscillating Conveyors and First Commercial Installation of New Heat Dryer Feature 500-T.P.H. Plant

OPERATING FLEXIBILITY, including dual washing and dewatering circuits for improving plant availability, oscillating-type conveyors and the first commercial installation of the Verti-Vane

dryer, are features of the new all-bolted preparation plant at the Maid Marian strip mine, Central Indiana Coal Co., Linton, Ind. The plant, designed and equipped largely by Link-Belt, is conservatively

rated at 500 t.p.h. raw-coal feed. At present, with only one strip pit in service, the plant is preparing 3,500 tons in seven hours, the coal from the pit containing approximately 20 percent refuse.

The 25-ton trucks from the strip pit discharge their loads, on the run, over a two-lane 69-ft.-long 375-ton hopper. From the hopper the run-of-pit coal is conveyed on a 48-in.-wide 7-ply 32-oz. duck and Buna No. 1 synthetic belt conveyor, installed on a 17-deg. pitch, to the Bradford-breaker room. As the coal



THE TWO-COMPARTMENT oscillating conveyors delivering prepared coal to side-pocket chutes are mounted on springs to absorb the shock on the backward motion and impart no appreciable vibration to the plant structure.



WHITE-STEAM EXHAUST from the four 50-t.p.h. new-type vertical heat dryers indicates effective fine-coal drying.



FIRST COMMERCIAL INSTALLATION of the new dryer. The overhead duct delivers 600-deg.-F. gases from the furnace.

is discharged from the belt, the fine sizes pass through the stationary grizzly (3-in. clear opening) and the remainder passes into the breaker, where the sulphur balls and hard rock (mostly sandstone) are removed, thereby eliminating the necessity of hand-picking.

Breaker Serves as Separator

The 9x17-ft.-long 12-r.p.m. Bradford unit is, in effect, used both as a breaker and a separator. The holes in the first half of the cylindrical screen are 6 in.; those in the second half, 4 in. All the coal is broken loose from the sulphur balls by the time it is one-third the way through the breaker. Since most of the sulphur balls are over 4 in. in diameter, they pass out the end of the breaker into the dry-rock bin. No coal has ever been discharged into the dry-rock bin, even in cold weather when the coal came from the pit frozen.

The 3x0 bypassing the stationary grizzly and the 6x0 product from the Bradford breaker are combined to make up the total feed to the plant and are conveyed to the wash-box floor by a flight conveyor. At this point in the flowsheet (Fig. 1), dual washing, sizing and dewatering circuits are provided. Each circuit consists of: (1) a Model 5044-E 250-t.p.h. Link-Belt air-pulsated wash box equipped with a 14x27-in. Roots-Connersville blower having a capacity of 3,000 c.f.m. at a 3-lb. pressure; (2) a flexible-hanger-type classifying screen equipped with water sprays and having a top speed of 150 4½-

in. strokes per minute; and (3) a 6x16-ft. Allis-Chalmers Low-Head dewatering screen with reverse-end-tension decks fitted with stainless-steel cloth having 1-mm.x⁵/₈-in. slotted openings.

Dual washing circuits improve the efficiency of the washing equipment, especially when the raw-coal feed to the plant is slow. For good operation each wash box must be provided with at least a 200-t.p.h. feed and each box, of course, works best on a constant feed. If there is not sufficient coal to warrant using both wash boxes, or if mechanical trouble develops in one circuit, all the coal may be diverted to the other circuit. In an emergency one wash box will accommodate up to 400 t.p.h. raw feed, or about 2,300 tons clean coal per day.

The refuse collected by the wash-box elevators is conveyed by belt to the wet-gob bin. The float in the refuse from the so-called secondary or middlings elevator totals only 2 percent and, therefore, is discharged as waste. Two 12x10-in. 4,000-g.p.m. Type CW Allis-Chalmers pumps (Crane valves and fittings) pump water to the wash boxes.

The classifying and dewatering screens are located in line with the wash boxes so that the coal is transferred along straight paths, avoiding the necessity of using additional water to sluice it along curved troughs. On the classifying screens the 6x0 washed coal is dewatered and sized into 6x3, 3x2, 2x1½ and 1½x¾ products. These four sizes are discharged into separate compartments of Link-Belt oscillating-

type conveyors. These are new-type conveyors for transporting coal horizontally in a cleaning plant.

Oscillating Units Versatile

Each of the two oscillating conveyors has two compartments. One unit is 42 in. wide by 131 ft. long and handles 75 t.p.h. of 6x3 and 125 t.p.h. of 3x2. The other conveyor is 36 in. wide by 100 ft. long and accommodates 75 t.p.h. of 2x1½ and 75 t.p.h. of 1½x¾. A 20-hp. motor drives the 131-ft. conveyor and a 15-hp. motor is used on the 100-ft. unit. The steel compartments or troughs are rectangular and have three smooth surfaces. The tops are open. Coal is discharged from the sides through gates. Each gate pivots and may be adjusted to cut any percentage of the product available in that compartment of the conveyor.

The conveyors are mounted on arms and springs which absorb the shock on the backward motion. An unusual feature of the operation of the oscillating conveyor is that the shaking motion does not appear to transmit any vibration to the plant structure. The initial cost is about the same as other types of conveyors. The advantages are: (1) the drive requires only about half as much horsepower as other types of conveyors; (2) cost of maintenance is estimated to be small; and (3) a compartment may be used to carry one size between two locations and, a little farther along, may be used to handle another size between another set of points.

The four sizes discharged from

Quality Preparation and Operating Flexibility Emphasized at Maid Marian

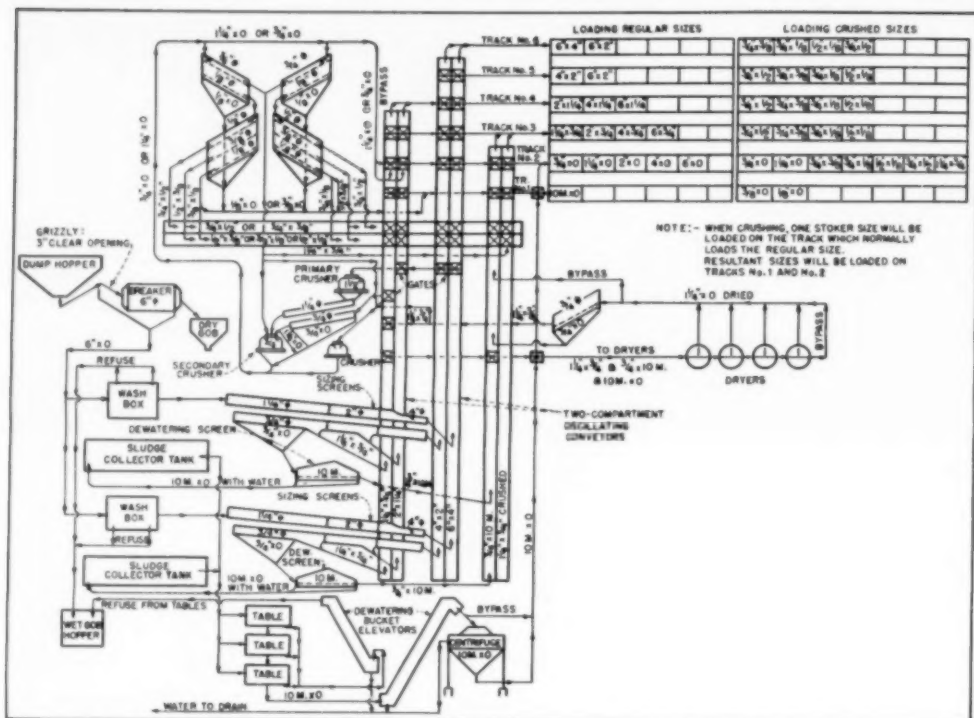
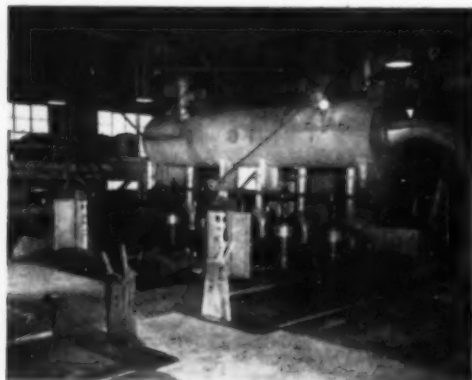


FIG. 1—MAID MARIAN FLOWSHEET. Dual washing and dewatering circuits, new-type oscillating conveyors and the first commercial installation of 50-t.p.h. vertical-type dryers are among the equipment featured at this modern 500-t.p.h. plant.



WITH DUAL WASHING CIRCUITS, only one need be used if repairs are required on the other or the raw-coal feed is slow.



THE 43-STATION CONTROL BOARD at Maid Marian. The wash-box operator, George Campbell, also looks after the tipple board.

the classifying screens onto the oscillating conveyors may be routed directly to railroad cars, or to a crusher circuit for reduction to stoker sizes. The $1\frac{1}{4} \times \frac{3}{4}$ normally goes to the dryers.

The $\frac{3}{4} \times 0$ washed coal from the classifying screens is sluiced over

a 6x4-ft. fixed section of Bixby-Zimmer stainless-steel dewatering screen with 1-mm.x $2\frac{1}{4}$ -in. slotted openings onto the 6x16-ft. single-deck Allis-Chalmers Low-Head vibrating dewatering screen, discharging a product $\frac{3}{4}$ -in. by approximately 10-mesh, which may

be conveyed to the dryers or direct to railroad cars. The minus-10-mesh coal and water are sluiced to two 12-ft.-wide 40-ft.-long sludge-collector tanks. The overflow from these tanks is recirculated to the washing system.

The minus-10-mesh dewatered

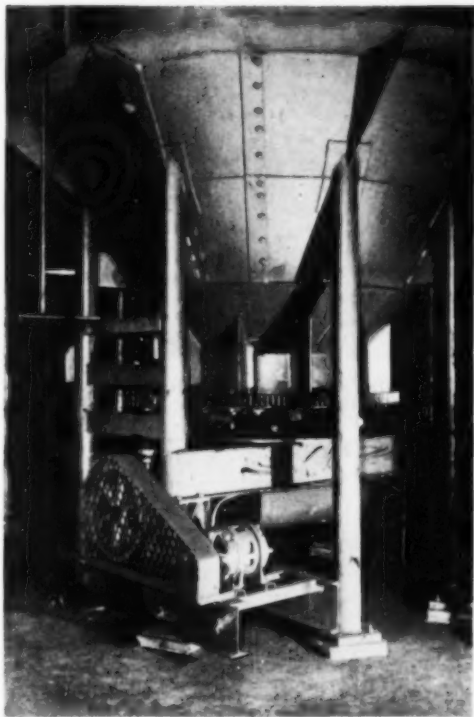
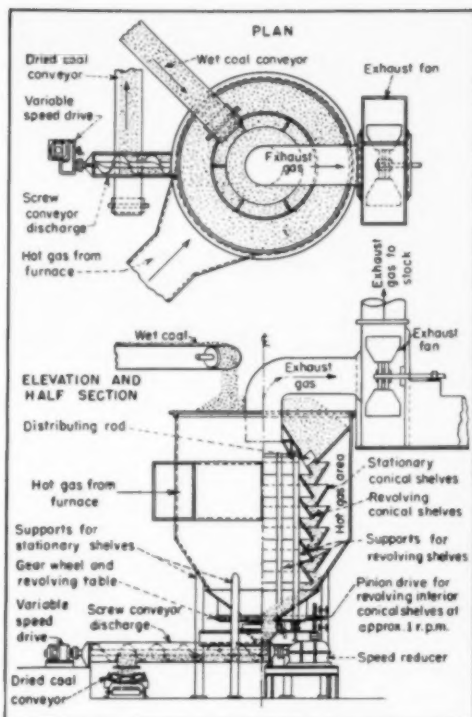
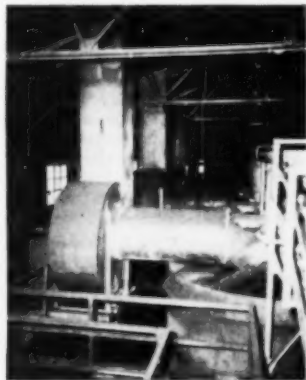
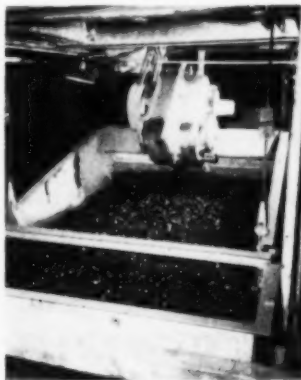


FIG. 2—HOW THE NEW DRYER used at Maid Marian is constructed. The unit reduces moisture content from 10 to 3 percent.

LOW-SPEED OPERATION of the vertical drying unit keeps maintenance cost down and permits use of low-temperature gases.



WATER SPRAYS are installed to facilitate accurate sizing of the $\frac{3}{4}$ -in. x 10-mesh on the vibrating dewatering screens.



WHERE THE COAL enters the dryers and the moisture-laden gases are exhausted.

coal is cleaned by a group of three 25-t.p.h. Deister Plat-0 washing tables. The minus-10-mesh refuse from the tables is sluiced to a 12-in.-wide 10-t.p.h. Luhrig dewatering bucket elevator and is finally discharged into the wet-refuse bin. The clean coal from the

tables is sluiced to an 18-in.-wide 40-t.p.h. Luhrig dewatering elevator and carried to the 48-in. 25-t.p.h. CMI centrifugal dryer. The centrifuged product goes to railroad cars or to the heat dryers.

The only clean coal lost by the plant's processing equipment is in

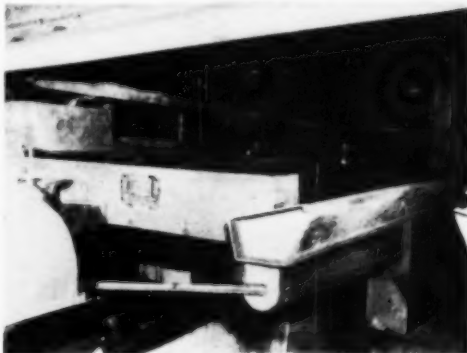
the effluent from the centrifuge, plus a small quantity of minus-28-mesh carried off in the clean-coal elevator boot overflow.

The plant's entire tonnage of $1\frac{1}{4}$ -x0 washed coal can be dried in the Baughman Verti-Vane heat dryers (Fig. 2). This group of four heat

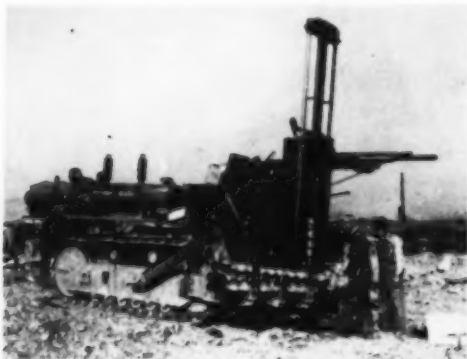
Central Indiana Equipment Geared for High Operating Efficiency



EIGHT 25-TON TRUCKS DUMP ON THE RUN at the two-lane 69-ft.-long 375-ton raw-coal hopper.



THREE TABLES RECOVER the 10-mesh product, which is later de-watered in a 48-in. 25-t.p.h. centrifugal dryer.



DIESEL-ELECTRIC AUGER UNITS drill more than 600 ft. of 8-in.-diameter hole per shift in preparing the overburden.



A NEW BULLDOZER headed for the strip pit where it is to be put in operation to assist the 25-yd. dragline.

dryers is the first commercial installation of this type of unit. The Baughman dryer, named for its designer, R. G. Baughman, general superintendent of preparation and construction, Central Indiana Coal Co., is manufactured and distributed by Robt. Holmes & Bros., Inc., Danville, Ill.

The Verti-Vane dryer is a vertical unit, cylindrical in shape, consisting of two series of conical shelves opposing each other and arranged to provide support for a continuous vertical column of coal, with an outer casing forming the hot air chamber.

The wet product is deposited in a surge bin at the top of the dryer and moves slowly downward, forming a continuous column of coal. The hot air passes from the outer chamber through the mass of coal, which is gently agitated the entire length of the vertical column by the rotation of the inner series of shelves.

The air, after picking up mois-

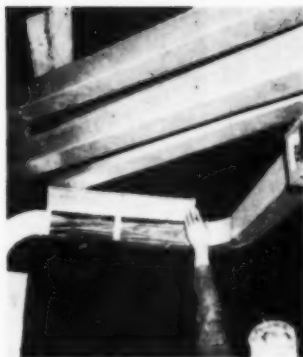
ture, is exhausted through the central chamber by an exhaust fan at the top of the unit. The dried coal passing through a cooling chamber at the bottom of the dryer is discharged through a central opening and conveyed away by a screw conveyor. A 5-hp. motor rotates the inner revolving section of the dryer at 2 r.p.m. A screw conveyor, driven by a 3-hp. motor, extracts the dried coal at the bottom of the unit.

Dryers Conserve Fuel

A 45,000,000-B.t.u. air-cooled furnace (Furnace Economy Co., Chicago), equipped with three Firite stokers, supplies the hot gases for drying the coal. About 3,000 lb. of coal is required to dry 200 t.p.h. Each dryer unit is equipped with a Size 59 General Industrial exhaust fan (New York Blower Co., Chicago), driven by a 50-hp. motor through V-belts, to pull the hot gases through the coal and exhaust them to atmosphere.

The furnace supplies 32,000 c.f.m. of gas at 600-deg. F. to each dryer. Temperature of the moisture-laden exhaust gases is 120 to 125 deg. F. Heat-drying the coal reduces its moisture from 10 to 3 percent. The temperature of the coal as discharged from the dryer is 80 deg. F. for 3-percent-moisture coal; 70 deg. for 4-percent-moisture coal. The 3-percent-moisture coal from the dryers can be screened over a 6x16-ft. Allis-Chalmers Ripl-Flo screen into two sizes: $1\frac{1}{4}\times\frac{3}{4}$ and $\frac{3}{4}\times 0$.

The manufacturer claims the following advantages for the Baughman Verti-Vane dryer: (1) degradation is reduced to a minimum; (2) slow movement of the coal through the unit makes possible the use of low-temperature gases; (3) low-temperature operation prevents overheated product; (4) lower section of the dryer acts as cooling chamber, resulting in cooler discharged product; (5) vertical construction requires a minimum of floor space; (6) uniform drying



ALUMINUM GUTTERS with hinged covers accommodate tangle wiring.



DETACHABLE LIGHTING FIXTURES facilitate cleaning and safe renewal of lamps.



PULL-BACK-TYPE CAR RETARDER can handle two loaded cars on 2-percent.



THE 25-YD. DRAGLINE moves up to 65 ft. of overburden to reach the 40-in. seam at the Central Indiana operation.



MAID MARIAN'S TONNAGE, at present, comes from one pit. Equipment is on order for an additional pit.

without cataracting (smooth continuous flow) eliminates need for dust collectors; (7) no auxiliary equipment is required for drying fine coal as fines may be left in product being dried; (8) high thermal efficiency, proven by exhaustive tests, means more dry product per B.t.u. burned for heat; (9) low initial cost; and (10) low operating and maintenance costs. The original pilot unit was operated for a period of 1½ years without any maintenance cost or visible wear.

The crusher circuit will accommodate the 6x3, 3x2 and 2x1½ from the classifying screens, as well as the 1½x¾ from the dryers, for the preparation of a variety of stoker fuels. The first three sizes, or the 6x1½ fraction, are first conveyed to the primary crusher, a Type C 250-t.p.h. 36x60 Link-Belt double-roll chain-driven unit, and broken to minus-1½-in. The discharge from the primary crusher is delivered to a double-deck flexible shaking screen. The top deck has

1½-in. openings, the bottom deck ¾-in. The oversize from this screen is delivered to a secondary crusher, also 36x60, set to produce approximately ¾x0 coal. Either the plus ¾ or plus 1½ from the sizing screen also can be admitted to the secondary crusher, depending upon size of stoker coal desired.

Twin Units Screen Stoker

The resulting products are conveyed by 36-in. belt conveyor and 48-in. flight conveyor to twin screening units, each consisting of (1) a double-deck 6x14-ft. Ripl-Flo screen with ¾-in. square openings on the top deck and 1½x2-in. slotted openings on bottom deck; and (2) a triple-deck 6x14-ft. Ripl-Flo screen with ½-in. square openings on top deck, ¾-in. square openings on middle deck and 1½x2-in. slotted openings on bottom deck.

These screens are provided to make the following stoker sizes: ¾x1½, ½x¾, and ¾x1¾, or any

combination thereof. The oversize from these screens and part of the 1½x¾ from the oscillating conveyor, which may include the 1½x¾ dried coal, can be diverted to a 200-t.p.h. Flextooth crusher. This crusher makes it unnecessary to recirculate the plus-¾ coal from the final screens through the secondary crusher.

The tipple has six loading tracks. A 36-in. belt loading-boom is provided on Track 1 for loading carbon. A 48-in. belt-boom is provided on Track 2 for loading screenings. Scraper-type booms (36-in.) are provided on Tracks 3, 4, 5 and 6, where the larger sizes are loaded. Each boom is positioned with a 6,000-lb.-capacity boom hoist. All car retarders are pneumatically controlled. A new pull-back-type car retarder, manufactured by Robt. Holmes, is being used on Track 2. This retarder is capable of dropping down or pulling back two loaded cars on a 2-percent grade.

The refuse, aggregating about 20



W. W. Dukes (left), assistant chief engineer; R. G. Baughman, general superintendent of preparation and construction; Batey Terhune, pit foreman; R. L. Bedwell, billing clerk; and John H. Donahue, weighmaster.

percent of the raw-coal feed to the plant, is hauled from the dry- and wet-gob hoppers to a gob dump by two 15-ton rear-dump Euclid trucks. The material is spread and packed in 3-ft. layers by a heavy bulldozer to exclude the air and prevent spontaneous combustion. The side walls are sloped and also packed at the same time.

The 500 tons of steel required for the plant's structure was fabricated by the Vincennes Steel Corp. and erected by the coal company's force. Charles McMillen supervised the work and used a crew with little or no experience in steel erection. Only two very minor injuries were sustained by the erection crew during the seven-months-long job.

Bolted Construction Featured

The structure, generously designed, is bolted together with square-head bolts and square-head nuts. The only connections riveted were those involving the attachment of clip angles, etc., on certain pieces at the fabricating plant. No. 23-gage Plasteel 2½-in. corrugated sheets were used to enclose the plant.

The arrangement of the equipment in the plant provides maximum accessibility for inspection and repairing. The 440-volt starters (General Electric) have three-pole air-circuit breakers instead of fuses for short-circuit protection, and heater- or resistance-type thermal relays for straight overload protection. The pushbutton control voltage is 110. The main control board, located on the wash-box floor, has 43 control stations and is attended by the wash-box operator. The motors, some splashproof, are Allis-Chalmers and Westinghouse.

Central Indiana Operating Personnel

INDIANAPOLIS, IND.

R. H. Sherwood, President
B. E. Lundblad, Vice President (Sales)
W. H. Stewart, Vice President (Operations)

S. F. Sherwood, Assistant to President
OPERATING OFFICE, LINTON, IND.

Ralph Kohr, General Superintendent of Production

R. G. Baughman, General Superintendent of Preparation and Construction

James R. Mitten, Preparation Engineer
Mike Zabinski, Assistant Preparation Engineer

Charles E. Downing, Chief Engineer
W. W. Dukes, Assistant Chief Engineer

Harry McGrew, Chief Electrician
Kenneth Goldman, Assistant Chief Electrician

Joe Whalen, Mechanical Draftsman
H. S. Larsen, Purchasing Agent

MAID MARIAN MINE

Homer Miller, Tipple Foreman
Clyde Rodocker, Assistant Tipple Foreman

Batey Terhune, Pit Foreman
Pierce Wright, Head Garage Mechanic

Norvin Holt, Chief Coal Inspector
R. L. Bedwell, Billing Clerk

Much of the wiring is laid in a square-troughed aluminum gutter (Frank Adams Electric Co.), and is always accessible through hinged covers.

The lighting fixtures, illustrated in this article, are suspended from a hook and energized through plug-in-type flexible cords. This ar-

range makes replacement of the lamp safer since the plug can be disconnected while the lamp is being installed. Also, this type of installation facilitates cleaning as the fixtures are readily detachable.

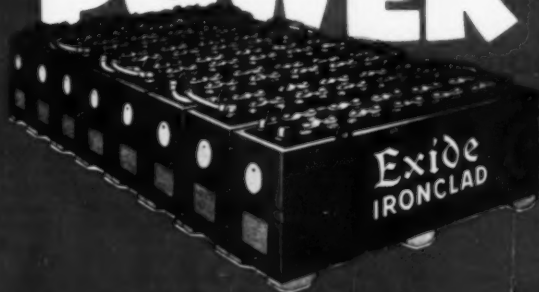
Dragline Strips 65 Ft.

At the strip pit, a 25-yd. 1150B Bucyrus-Erie dragline (with Westinghouse electrical equipment) moves as much as 65 ft. of cover (dirt, shale and slate) to reach a 40-in. seam. Two operators are used per shift instead of an operator and an oiler, and they work hour about at the controls. To provide itself with a firm footing, the dragline prepares its own road as it removes a cut. The procedure is to remove 6 or 7 ft. of the top soil ahead and then spread a 3-ft. layer of shale or slate from the pit.

Two self-contained tractor-mounted electrically-operated vertical-type 8-in. auger drills follow back of the dragline to drill necessary holes to shoot overburden for the next 80-ft.-wide cut. The tractors, Type TD-24 International and Type HD-14 Allis-Chalmers, are equipped with d.c. generators and motors for driving 8-in. Parmanco drills. The drill units, equipped with patented augers with interrupted flights and secondary cutters, are drilling more than 600 ft. of hole per shift. The holes are spaced on 20- to 24-ft. centers and are loaded with 75 to 350 lb. of du Pont explosives.

The coal is loaded by a 5-yd. Model 75-B Bucyrus-Erie shovel (General Electric equipment) and is trucked to the preparation plant in eight 25-ton Euclid trucks equipped with Cummins diesel motors.

SAFE DEPENDABLE POWER



EXIDE-IRONCLAD BATTERIES assure full shift availability

EQUIP your battery-powered haulage units with Exide-Ironclad Batteries . . . and keep tonnage moving in maximum volume, at minimum power costs. In mine after mine, in all coal producing areas, these trustworthy batteries are giving daily proof of their ability to keep equipment rolling along in top form, straight through to the end of the shift.

Exide-Ironclad Batteries are DIFFERENT from all others. They have ALL FOUR of

the characteristics that a storage battery must have to assure maximum performance from mine locomotives, trammers and shuttle cars—high power ability, high electrical efficiency, ruggedness and a long life with minimum maintenance. The combination of these four Exide-Ironclad characteristics assures years of day-in, day-out service with dependability and economy.

1949 Coal Convention and Exposition, American Mining Congress, Cleveland, Ohio, May 9th to 12th. Visit Exide Booth A341
"Exide-Ironclad" Reg. Trade-mark U. S. Pat. Off.

1888...DEPENDABLE BATTERIES FOR 61 YEARS...1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto



The Foremen's Forum

How Simple Psychology Helps Develop Safe Work Habits

FOREMEN and other mine officials used to think that more safety rules and regulations and more state and federal safety laws were the best way to improve the industry's safety record and they put most of their faith in strict, hard-boiled enforcement of rules and laws.

But now foremen in coal mining, as well as in other industries, have learned that the human factor also is a strong element in the safety record and they are searching for ways to get their workers to string along willingly in safety improvement. Rules and laws still are important, for they express in words the principles on which safe work practices are built. However, with a new understanding of what makes men tick and why they act the way they do, coal-mine foremen are putting bigger stress on psychology in safety.

What is psychology? How does it work? What can a coal-mine foreman do with it?

Psychology, as pointed out earlier, is the study of why men think and act the way they do. As far as mine safety is concerned, psychology tries to find out what makes men aware of danger and quick to avoid it and what makes them willing to abide by the rules set up for their protection. The use of psychology on mine workers aims at creating what we call, for want of a better term, safety consciousness—that is, a prompt and willing response to danger without need of thought or on-the-spot planning. In short, a safety-conscious worker will react swiftly, correctly and automatically to danger because safety always is in the front part of his mind.

Here are a few examples of how safety consciousness—the right response to a stimulus of danger—shows up in safe work habits:

1. A motorman leaves his locomotive to renew his sand supply or for some other reason. But before he leaves, he turns the control handle to the "Off" position, sets his brakes tight and takes the pole down off the trolley wire.

2. Arriving at his working place at the beginning of the shift, a miner looks for the fire boss' mark, tests the roof carefully and sets safety

posts or other timber wherever needed. He tests the roof often during the day. When somebody else comes into his working place, our safety-conscious miner stops what he is doing and checks the roof. When a mine car is brought up, he sets brakes, throws a sprag in a wheel or by some other safe means blocks the car to keep it from rolling accidentally.

3. A brakeman always puts a trip light at the rear end of the trip. He does not jump off moving trips to throw switches or open doors. He does not couple moving cars—certainly not from the inside of a curve—and he always wears snug-fitting clothes.

Habits Control Actions

The above are run-of-mine examples of safety consciousness, a strong element in preventing accidents. Each situation above—leaving the locomotive, entering the working place and riding the trip—brought the safe response automatically. That is habit.

Men live by their habits. Just take a commonplace example. When we get up in the morning, most of us don't do much thinking until we've had that first cup of coffee. Automatically, by the time we sit down at the breakfast table, we have brushed our teeth, shaved, stepped into our pants and tied our shoes. We did it all by habit. Take it another way. If you are right handed, suppose your right hand got smashed. Could you shave with your left hand? Left-handed shaving takes a lot of thought and care for a right-handed man. There's nothing automatic about it. It's not habit.

That's why, as the old saying goes, "You can't teach an old dog new tricks." In other words, habits, whether good or bad, are hard to break once they have been shaped. To break a habit, a man first must unlearn the old way of reacting and then learn a new way.

To illustrate the point in coal mining, take the bad habit of letting things fall wherever they may when a job is done. That is commonly known as bad housekeeping. It can play havoc in a machine shop, to mention

only one place where it is important to keep things in their right place. Yet some mine shops are first-class examples of how not to get work done quickly and safely, simply because the men who work have bad work habits. Machine parts, tools, nuts, bolts, washers, chains and rubbish are scattered around on work benches where they can't be found when needed, besides being in the way. The floors are oily, dirty and littered with waste cloths, old paint buckets and empty boxes, over which workmen stumble as they walk from one job to another. A mechanic, working on a torn-down mining machine, crawls from underneath dressed in grease-covered, oil-soaked coveralls which an electric arc, a welding flame or a cigarette lighter could set afire.

Usually, this is the type of shop that has no goggles or eye shield at the grinding wheel. Likewise, chain- or belt-driven machines, such as lathes, drills, power saws and shearers, have no guards to protect the operators. If you ask a mechanic in this shop to find a bolt or nut of a certain size, he has to scabble around in half a dozen bins or across the length of the work bench before he finds one—and then he probably has to clean it before it can be used.

In a shop like this, it is hard to do a good repair job—first, because nobody can move around freely or find anything and, second, because the kind of mechanics who leave things where they fall are not the kind who care much about doing a good repair job. If a loose bolt on the floor trips them and causes a sprained ankle, they have asked for it. That is bad enough. But if the bolt is one that they carelessly forgot to put back into a machine, that's worse, because that slipshod repair job goes back inside the mine. There, if a part flies loose or falls off because the machine-shop crew shirked its duty, somebody may get badly hurt. If a loose cable dangling to the shop floor trips a mechanic and he breaks his arm, that's bad enough. But that loose cable in the mine, making an arc, can cause an explosion that might snuff out the life of every man in the section.

Good management does not tolerate a shoddy machine shop because it is dangerous not only to those working there but also to the men underground. The shop foreman must see that his shop is kept clean and trim. Putting it into good working order for the first time is hard enough. Keeping it that

MINE
LUBRICANTS

MARATHON

VEPRESSA



Tough spot for a lubricant?... ***That's the spot to use Vepressa!***

It takes a tough lubricant to talk back to the swing gear on your big strip shovel. It has to stand up under tremendous pressures, quick reversals, sudden shock. That's why you'll find Marathon Vepressa being specified in more and more mines for the toughest jobs. For Vepressa is compounded

for extra high adhesive qualities and film strength—plus stability and lubricating performance. It's non-corrosive to any type of metal or bearing. Inhibits sludge and oxidation. Unaffected by condensation moisture in gear cases. Will not separate in storage or in service.

Like to know more about the operating benefits of Vepressa in swing gears, lubricated eccentrics, high-speed anti-friction or plain bearings and all enclosed reduction gears? Write, wire or phone. We'll send an Ohio Oil Company mining lubrication engineer with the facts.



A COMPLETE LINE OF MARATHON LUBRICANTS FOR EVERY OPERATION IN YOUR MINE

THE OHIO OIL COMPANY

Producers of Petroleum since 1887

GENERAL OFFICES: FINDLAY, OHIO • DISTRICT OFFICES: ROBINSON, ILL., INDIANAPOLIS, IND.

COAL AGE • April, 1949

105

How Men Learn Safe Working Habits Via Psychology

way is tougher still because it requires a complete about-face in the habits of the men who work there.

How can these men, as well as others who, like them, are not safety-conscious, be encouraged to develop safe work habits?

Psychology says that men's habits reflect their urges and desires. Thus it stands to reason that a safety program, if it is to be successful, must be made desirable to the workers and must fill a need. For example, a safety program based on the hope of a foreman and his superiors for a prize safety record may fail completely because the men simply are not interested in what management wants. In fact, if they are not on good terms with their foreman, they may even get a wrong-headed satisfaction if the accident rate goes up just because that would be rough on their foreman.

Each Man an Individual

One of the secrets of a successful program, then, is to find out, by close study and contact with the men on the part of the foreman, those desires and urges that are strongest among workers and to gear the appeal of the program to those motives. Not all men are driven by the same motives. That's another way of saying that different men react in different ways to the same situation or stimulus. That's why a foreman must study each man as an individual apart from the others and must angle his approach on safety to suit each man's strongest desires. For nearly every individual, it will be found that one of the following motives has a strong appeal.

1. Fear—fear of injury and the pain arising from injury; fear of loss of wages; fear of punishment.
2. Love—love of home and family; love of work.
3. Self-interest—desire for recognition or promotion; the urge to excel.
4. Group interest—loyalty to crew; loyalty to company and foreman; desire to take part in activities benefiting the group, such as making suggestions or competing with other groups.

Gearing the safety program to these urges and others like them is the first big step in putting it across, because this approach builds worker interest and cooperation. A good example of how it works occurred during the recent war, when a certain manufacturing plant, finding itself short-handed because many of its men had been called to the armed forces, hired women to take their places. One of the big troubles was that when the quitting-time whistle blew, the women, as well as the men who still were employed there, raced through a narrow corridor that had two 45-degree turns, then down the stairs at the end of the corridor and out into the plant yard. In the general scramble to get out, with a lot of pushing and shoving,

some of the women got banged around and bruised, not only by collisions with other racing workers but also by falling down the stairs. Lectures, penalties, signs and comic posters did no good at all and people kept on getting hurt until a bright supervisor hit on an idea. At each of the two 45-deg. turns in the passageway, he put a full-length mirror. The result was that every woman slowed down to see how she looked before going out on the street and accidents stopped altogether. Safety was geared to a woman's urge to look her best.

Of course, there are no women in coal mines but the story above shows how safety results depend upon tying safety to human desires. No safety program will amount to more than the paper it's written on unless it inspires willing compliance with the rules and fills a human need.

The best time to start building safety consciousness among mine workers naturally is when they are first employed. Even here, however, safety often gets off to a bad start because the official approach is wrong. For example, a job applicant is given a physical checkup to assure the company, he is told, that he is a good risk. That doesn't mean much to the job seeker. He would have a much better start toward safety consciousness if the doctor explained how the examination guides the worker to the right sort of job and keeps him from trying a task that might rupture him or strain his back. Even an eye examination should be explained in terms of the protection it offers the worker—how it shows whether he can detect approaching mine cars, see broken rails or spot faults in the roof. That approach is right down the line of the personal factor and the human element.

New Workers Need Good Start

Take the new employee a little further into his job just to see what happens all too often. After hiring the new man, the superintendent or foreman, with feet propped on the desk, asks the beginner if he knows anything about the state's mining laws. If the new man, eager to make a good first impression, says that he does, the superintendent waves him out of the office without further ado, not troubling to test his knowledge of the laws with a few questions. As the new man moves toward the door, the superintendent hands him a book of company rules. The new man sticks the book in his pocket—and that's the end of that. No discussion, no instruction, no explanation—just a book of rules to carry in the pocket for a while.

Outside the superintendent's office, the foreman takes over. He escorts the new man to his working place, tells him briefly what the job is and then leaves him on his own. No helpful hints, no instructions, no warnings about the hazards of bad roof or

swinging booms. Is it any wonder that the new man turns up next week with a broken leg or a cut hand?

Of course, there is a right way to get the new man set for his job and make him safety-conscious from the start. The superintendent explains the mining laws, at least as far as they apply to the new man's job, pointing out how safe work practices spell the difference between sudden death and long life. The same holds true for the company rules. However, the stress should go not on the company side but on the personal side, showing the man how the rules were made up to protect him and how he gains by following them.

Make Men Feel Important

At the working place, a mine official or some reliable older hand works along with the new man for a while, showing him the tricks of the trade, the peculiarities of the roof, the way the machines and conveyors work and the location of fire-fighting and other safety equipment. Giving a new worker this kind of treatment shows him that the company is interested in him and thus makes him feel important. A psychology professor would call this "satisfaction of the ego." Whatever it is called, the man is off to a good start.

A good start is fine but it soon will peter out unless the foreman keeps plugging safety and pulling it to the front of the new man's mind. He must talk safety again and again, tailoring his line to fit the particular motives that drive the man—fear, love, self-interest, group interest or whatever else it may be. Experience and observation soon will tell him what approach brings the best response from the new man. Once he learns the right tack, he keeps hammering away, just as if he were teaching the multiplication tables.

The right kind of foreman not only explains the rules so his men will know why they are asked to do certain things; he also urges them to make suggestions leading to safer work conditions, recognizing their accomplishments and making them feel that they are important men in the company.

To sum it all up, men are not machines. If they were, they would obey all the laws of physics, we could predict what they would do under any set of circumstances and we could control them by pushing buttons. Unlike machines, all men act differently, each according to the laws and whims of his own personality. That is what psychology is all about. The psychologists don't yet know all the complex laws of human conduct but they have given us some broad principles to go on. They know that men are ruled by their emotions, their desires and their habits. If foremen apply this principle in their accident-prevention programs, they can make their workers safety conscious.

Barber Greene



447108

LOW HEADROOM..HIGH EFFICIENCY CONVEYORS...

Standardized

for easy assembly and relocation



B4750



You can cut the cost of getting the coal out of these low seams with simplified, "standardized" B-G channel-frame belt conveyors. These B-G pre-engineered underground conveyors come to you clearly marked for quick and easy assembly—are simply disassembled, relocated with a minimum loss of working time.

Rugged channel frame has skid legs for low head room mounting on the floor, holds smooth rolling B-G Carriers in true alignment . . . To cut costs now, why not see your B-G Distributor about these widely used mine conveyors?

(Left) Less assembly time, less "blue-print work"—B-G Mine Conveyors (Channel or Truss Frame) with complete accessories—carriers, take-ups, drives,

A-frames, etc.—are designed for maximum interchangeability, greatest ease in selection and erection. Assembly-tested at the factory!



BARBER • GREENE COMPANY, AURORA, ILLINOIS

Constant flow Equipment



LOADERS



PERMANENT CONVEYORS



PORTABLE CONVEYORS



COAL MACHINES



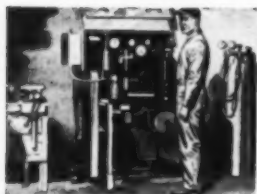
BITUMINOUS PLANTS



FINISHERS



DITCHERS



Operating Ideas



ALTHOUGH the man-trip-car body is only 11 ft. long, it accommodates 16 men without cramping legs.

Unit Man-Trip Cars Switched Into Sections Save Travel Time

TRAVE TIME in the Wildwood, Pa., mine of the Butler Consolidated Coal Co. has been reduced to what appears to be a minimum by providing a special car for the crew of each mechanical section. With the new cars, there is no changing of cars nor time lost by walking considerable distances in

the sections before work is started.

Eighteen men, including the motorman and snapper, comprise the maximum crew for a mechanical unit. The new-type car accommodates 16 men comfortably. Entering the section, the motorman, of course, operates the gathering locomotive, while the snap-

per rides in the end of the man-trip car. Cars leave the mine bottom coupled as a train and pulled by the main-line locomotive. At the sections they are switched off and taken into the sections by the gathering locomotives of the respective mechanical units.

The 14 man-trip cars were built in the mine shop, using the same 14-in. wheels, axles and two coil springs per wheel that are standard on the coal cars. The wheel base of 56 in. also is the same. Although the body of the car is only 11 ft. long, leg room is provided for all occupants by the back-to-back arrangement of the seats over the wheel hoods. Track gage is 42 in.; car-body width, 6 ft.; total height of the car, 59 in.; floor height above the rail, 12 in.; and inside clearance between floor and roof, 46 in.

The car roof consists of a $\frac{1}{4}$ -in. steel plate topped with $\frac{1}{2}$ -in. plywood for electrical insulation. Small chains are provided for snappers to hook across the side entrances before a car or trip is moved. In addition to standard couplers, the car ends are each fitted with heavy short chains which are hooked together as safety couplings. Holding bars are provided for the snapper on the outside ends of the car near the top. Each car has a red reflector, a clear window and a red window. Standard flame safety lamps hung just inside the red window can serve as trip lamps.

Balanced Pipe Gates Block Strip-Mine Roads



HOW HE CAN LIFT and swing the pipe gate with one finger is demonstrated by C. W. Corbett, general manager.

COMPLYING with the requirement that some of its private mine roads be kept blocked off to vehicular travel except during hours of actual haulage of coal presented a somewhat puzzling problem to officials of the Rimersburg Coal Co., Rimersburg, Pa., until they hit on the balanced gate illustrated.

The stepped bar is 40 ft. long and is fabricated from 4-, 3- and 2-in. pipe. The posts are 36 ft. apart and the bar is pivoted on one post and padlocked to the other. Very little force is required to swing the gate.

The road is part of 2½ miles of road the company has constructed on a game preserve to serve its strip operation. The lease from the state calls for gates to prevent vehicular access onto these new roads while not in use.

"King Size" Power-Shovel Bucket
made of **J&L HEAT-TREATED JALLOY STEEL**
still going strong after full year's gruelling service!

**J&L
STEEL**

Performance record on this
Marion No. 5561 power shovel
proves high-impact and
abrasion resistance of
J&L heat-treated JALLOY



—40 CUBIC YARDS
of earth and rock in one "scoopful."
This monstrous power-shovel bucket
excavates 10 acres to a depth of 50
feet in a month.

Working day and night it removes
overburden on a large strip mining
operation in southern Illinois. As it
digs its way through some 15 feet
of limestone, 15 feet of shale and 20
feet of clay, it is subjected *continuously*
to severe abrasion and impact.

Yet the J&L heat-treated JALLOY

STEEL on the bucket has given
more than a year of service!

To date more than 11,000,000 cu.
yds. have been excavated, but the
excellent appearance of the J&L
heat-treated JALLOY STEEL indicates
a reasonable expectancy of
many more months of service before
replacement is necessary.

J&L heat-treated JALLOY STEEL
was developed for just such uses as
this—where steel must withstand
extreme abrasion and heavy shock
for long periods of time. Its out-
standing wear-resistant properties
make it especially useful for

Scrapers . . . Rock crushers . . . Bull-
dozers . . . Truck bodies . . . Dump
cars . . . Chutes . . . Power-shovel
buckets.

Wherever wear and abrasion are
limiting factors in the life of equip-
ment, you'll find it profitable to use
J&L heat-treated JALLOY STEEL.
May we send you the booklet men-
tioned in the coupon?

JONES & LAUGHLIN STEEL CORPORATION

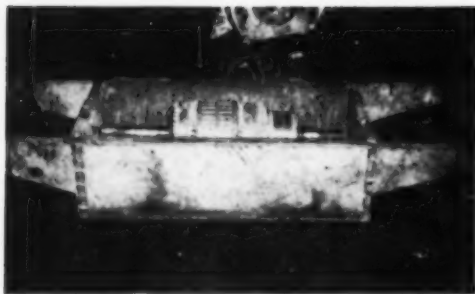
*From its own raw materials,
J&L manufactures a full line of
carbon steel products, as well as
certain products in alloy steel
and JALLOY (hi-tensile steel).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED
BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD
ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL
PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

Jones & Laughlin Steel Corporation
411 Jones & Laughlin Building
Pittsburgh 30, Pa.

- ☐ Please send me your booklet: "JAL-
LOY—J&L ALLOY STEEL."
☐ Do you recommend Jalloj for:

NAME _____
COMPANY _____
ADDRESS _____



RUBBER BELTING nailed to the top edges supports the armature and permits the box to be used for a larger variety of armatures.

Scrap Conveyor Belting Cradles Armatures

BY USING scrap conveyor belting as the support, armature-carrying boxes can be made to accommodate more sizes than the older type in which supports consist of cross pieces with notches at the center for the shaft. Shown in the photograph is one of the new boxes and a 10-hp. pump armature at the Praco mine, Alabama By-Products Corp., Praco, Ala.

At this fully mechanized 5,000-ton mine (washed-coal output), only three sizes of boxes are required for transporting all the armatures for underground machinery, including locomotives. The box illustrated will handle a 35B Jeffrey shortwall armature. The piece of scrap belting is nailed to the top edges of the box.

Rotary-Dump Maintenance

WITH THE MORE GENERAL USE of rotary-dumps in coal mining in recent years, proper maintenance is becoming increasingly important, writes Charles E. Chandler, Grindstone, Pa. While correct operation is necessary whether a dump is a single-car unit or an installation capable of handling an entire trip, maintenance problems are more intensified as the size of the installation increases, he points out.

Keep Dumps Level and in Line

The secret of keeping a lengthy dump with intermediate trunnions in good operating condition is to keep it level and in line. This is a job for an engineer with a transit and is one that should be done at least once each operating year. As most mine dumps have steel roof supports over them and steel legs along the side, it is a simple step to establish center punch marks on these stationary beams and on the rotating ring, which can be used by maintenance men for more frequent checking. Place a deep center punch mark at the top edge of each ring, in the center of the dump, and place another directly above on the stationary beam. That is done on the side of each ring for line. A pair of dividers then can be used to determine the correct line and level once an engineer establishes the true distances. In this way, maintenance men can check the dump as often as necessary without calling an engineer. Dumps that are low, high or out of line as much as $\frac{1}{4}$ in. can open up welds or shear off bolts and rivets in a short time.

Various types of guards over trunnions and wings on the ring to deflect the coal have been installed, but such measures are not effective, since the trunnions are bound to fill up with fine coal sooner or later. This results in the trunnion sticking and wearing a flat spot on the wheel or slowing down the dump, thereby requiring more power to turn it. Trunnions should be as open as possible and should be constructed with a large

hole directly under the wheel in the base of the trunnion casting and continuing on down through the trunnion support to permit any fine coal that might crowd past the wheel to escape. Washing it out once a week is necessary if the trunnion housing is tightly constructed.

Trunnion bearings should be placed squarely under the dump ring, and not too far apart. It is difficult to hold in position wheels placed too far apart because of the spreading action of the ring. If the bolts holding the trunnion keep shearing off, it is necessary to block the trunnion against the wall or some other firm support.

Most of the later installations of rotary dumps are equipped with roller bearings, but on the large railroad-car dumps the bronze bushing still is being used by some manufacturers. A roller bearing that is tightly sealed needs to be lubricated about every 30 days, while the plain bearing must be greased at least once or twice a week. Lubricant in the sealed bearing should not be too light, as heavier grease gives a better seal and keeps fine coal from being forced into the bearing.

Rope Adjustments Important

Although most of the newer dumps are electrically driven, through the trunnions, there still are many older mine dumps and larger railroad-car dumps turned by ropes. The pull-over ropes on mine-car dumps should be first adjusted when the dump is sitting work-ways. The rope should be loose enough that it will have a movement of about 3 in. in each direction from the center of the sheave groove. After the ropes on one side have been adjusted, rotate the dump and adjust the pull-back ropes in the same manner. Ropes must be kept of equal length on long dumps, since otherwise one or two will be doing all the work and will have their service life decreased accordingly. In addition, unequal ropes cause unnecessary strain on the dump sections. Sheave wheels

over the dump must be kept in line and lubricated at least once each week. Lubricating ropes with a good rope grease helps prolong their life.

Driving and clamp ropes on railroad-car dumps present an entirely different problem from those on smaller mine-car dumps. Because it is difficult to spread the ropes through the various enclosed sheaves, an accurate record should be kept for every rope and when the service period for each rope is up, it should be changed regardless of whether it shows wear. Limit switches must be carefully checked each month. Failure of a limit switch when the dump is setting down, since most car dumps set down with power, can result in breaking of the pull-down ropes or, if they hold, breakage of the driving gears.

Checking Lateral Sway

If the loaded car comes on the dump too fast, considerable lateral sway in the dump structure will occur when the car is braked to a stop. This sway eventually will cause loose rivets and bolts in the ring and structure joints. The most effective method of eliminating this movement is to cut the web out of each end of a 5-ft. section of 100-lb rail for a distance of 24 in., heat the rail and pound the ball section down to meet the lower base and weld the crack up. Mount this 5-ft. section on the end of the dump between and just below the car rails. Bolt to the dump foundation a heavy piece of flat iron, leaving 1/16-in. clearance between the two pieces. This will stop all lateral sway and help keep the rivets and bolts tight.

Heavy timbers placed on the inside of railroad-car dumps are soon chewed up by the irregular car sides. As an effective means of preserving these timbers, mount strips of 0.05-in. flat iron about 5 ft. apart and place at right angles to the timbers. Secure these strips with countersunk bolts to prevent them from being sheared off by the car sides.



OVER 250,000 FEET NOW RENDERING SATISFACTORY SERVICE

- KING KOAL underground CONVEYOR BELTING was developed and is being manufactured by Hamilton Rubber Mfg. Corp., to keep pace with the advent of underground conveyor belt systems.
- In every KING KOAL BELT is incorporated the essential qualities for economical conveying of coal with the positive assurance of long and uninterrupted service.
- For the ultimate in coal mine conveyor belting, specify KING KOAL CONVEYOR BELTS by

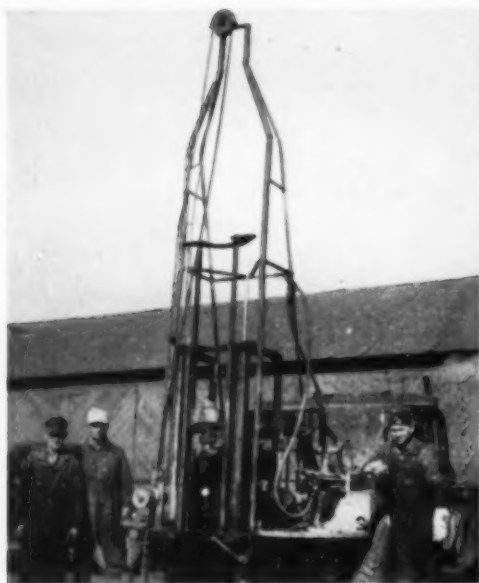


We will gladly submit
a sample upon request.

ADVANTAGES

- Resists severe impact . . .
- High tensile strength
- Flexibility
- Troughs easily
- Won't gouge easily
- Mildew-proof, won't rot
- Excellent for long and short hauls, also slope
- Runs true on idlers
- Unaffected by mine acids or alkalis

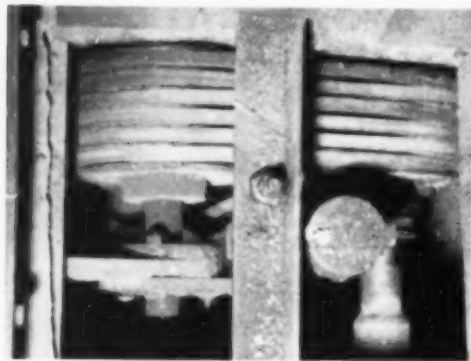
HAMILTON RUBBER MFG. CORP.
MANUFACTURERS OF QUALITY RUBBER PRODUCTS FOR OVER 25 YEARS



DRILL draws all power from truck engine. O. A. Matney (left), shop foreman; E. A. Craig, driller; Noel Crockett, machinist.



SECOND DRILL RIG has independent power unit for drilling. Hinged tower folds back over truck bed when traveling on highway.



V-BELT DRIVE takes power off engine jackshaft for drilling. Neutral clutch plate keeps truck still while drill works.



SHOP-MADE BITS of steel drillpipe and boiler plate and hard-surfaced with borium have boosted drilling speed and efficiency.

Drill Rigs and Special Bits Speed Prospect Drilling

HARD-SURFACED bits made in the mine shop and two vertical drill rigs mounted on trucks have increased the speed and efficiency of prospect drilling done by the Pioneer Coal Co., Walker, Mo.

One of the drill rigs, built on a Ford truck by O. A. Matney, shop foreman, and shown in the illustration at top left, draws all power for the cathead, the chuck, the water pump and the hydraulic-oil pump from the truck engine. This enables the drill crew on cold mornings to start work immediately after arriving at the drilling

site, without having to wait while a separate drill-rig engine warms up. A neutral plate installed in the truck transmission makes it possible to operate cathead, pumps and chuck through three Model A Ford transmissions mounted on the truck bed while the truck transmission is in high gear. Engine exhaust is vented above the truck cab.

A multiple V-belt drive, located beneath the cab floor (lower left photo), takes power off the truck jackshaft for drilling operations. Just behind the cab, three transmissions

driven by V-belts distribute power to the drives for the auger, cathead and oil and water pumps. Control rods extending from these transmissions to the back end of the truck bed permit 100 percent control from the business end of the drill, where the crew normally works. Power is transmitted to the square auger driveshaft through a V-8 Ford "banjo" housing and a chain drive. The hydraulic systems provide water for flushing at 200 lb. pressure and oil pressure for downward thrust on the auger at 300 lb.

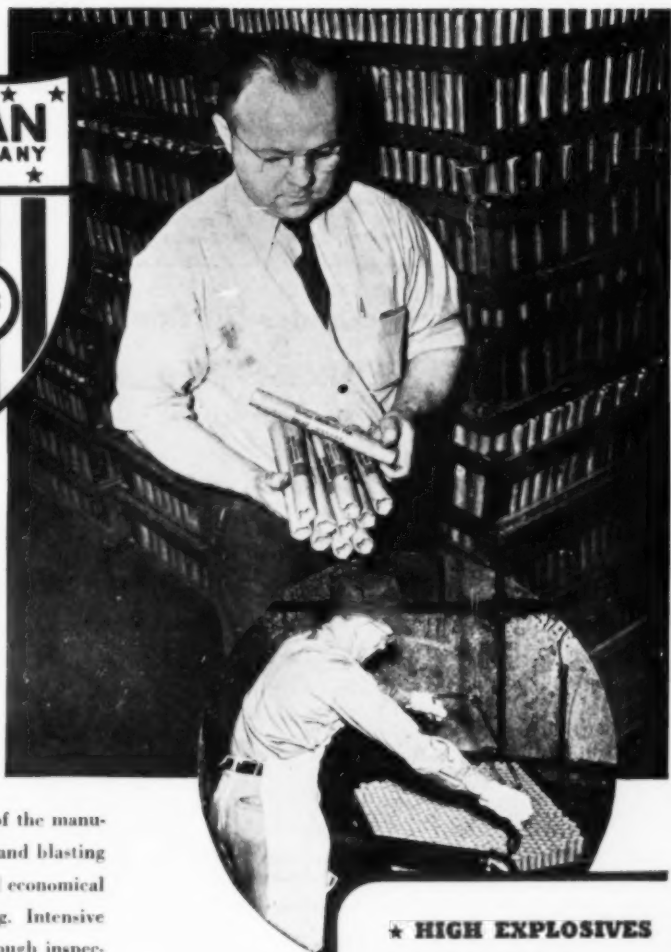
A similar drill rig, shown in the



**Nothing can
take the place of
unremitting care**

The care exercised in every detail of the manufacture of AMERICAN Explosives and blasting caps is reflected in their efficient and economical performance on all types of blasting. Intensive research, chemical control and thorough inspections add still further to your assurance of satisfactory results, whatever your blasting requirements.

• Capable field engineers are available at your call.



- ★ HIGH EXPLOSIVES
- ★ PERMISSIBLES
- ★ BLASTING
POWDER
- ★ BLASTING
ACCESSORIES

American Cyanamid Company



EXPLOSIVES DEPARTMENT
30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

SALES OFFICES: Pittsburgh, Pa. Bluefield, W. Va. Scranton, Pa. Pottsville, Pa. Chicago, Ill.
Maynard, Mass.

photograph at top right, differs in only one major respect from its companion—it is powered by an independent Model XAHU Waukesha engine mounted on the truck bed.

Bits used with the drills were especially designed by Noel Crockett, machinist, for cutting through hard limestone and rock and are made in the mine shop by Mr. Crockett. Step-by-step procedure in making the bits, as shown in the illustration at lower right, is to cut in half a standard 1½-

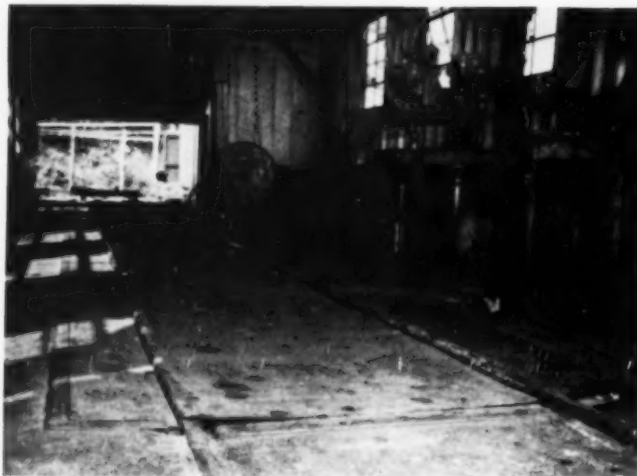
in. medium carbon steel drill tube, bevel one end and draw it down to a point. Teeth then are cut from boiler plate according to a pattern outlined in chalk on the plate. Boiler plate is used because it will not snap, in preference to spring steel, which will snap, or mild steel, which won't forge.

The teeth are welded to the pointed end of the tube and a ¾-in. hardsurfacing of Airco borium is acetylene-welded to the teeth to make the cutting edges. Two water holes, in addition

to the one already made when the point of the tube is drawn down, are drilled between the teeth. Guide fins, which are added last, also are hardsurfaced but not to such depth as the cutting teeth.

Citing advantages of these specially-made bits, Mr. Crockett points out that whereas prospect drilling formerly required 8 to 9 bits per hole cut through limestone, the new bits are good for 8 to 9 days at a rate of four to five holes per day.

Shop Crane Slides Pit Covers Between Rails



ELECTRIC CRANE hooked to a section of pit cover ready to slide it off between the rails out onto the floor out of the way.

WHILE NO STANDARDIZED METHOD of protecting motor pits in mine maintenance shops has been put into use to date, removable covers are reportedly preferred over removable railings, and steel covers moved lengthwise between rails now far outnumber the old-type covers consisting of individual planks or plates handled manually. In the new shop at Mine No. 3-B, Amherst Coal Co., Accoville, W. Va., the steel plates are moved by the floor-controlled bridge crane that serves the shop.

The pit is 45 ft. long and the part between the rails (44 in. gage) is covered by three ¾-in. steel plates each 15 ft. 4 in. long and having a hinged lifting ring in the center. Normally, the ends of the center plate overlap the ends of the other two by a few inches. To get the plates out of the way, they are slid along the floor between the rails. This is accomplished very simply by hooking the electric hoist of the crane to a plate, lifting it an inch or so and then tramping the bridge of the crane to place the plate in the location desired.

Outside Office Is Built Underground With Mining Equipment



NEW OFFICE is shown off by Dispatcher Fred Barton. The concrete eave seals to the rock and projects 12 in. outside. Even temperature of the rock helps warm the office in winter.

AT THE TIME several new mining machines, loaders and shuttle cars were on the outside waiting installation at No. 4 Mine, a drift operation of the Black Star Coal Corp., Alva, Ky., construction of a mine office for the dispatcher and mine foremen was decided on. Instead of putting up a conventional building, idle mining equipment was used to excavate an office space in the coal and rock at the side of the graded mine yard. Cost was comparable to that of a conventional building, but the underground construction offers definite advantages, since little artificial heat is required in winter and the office is naturally much cooler in summer.

The 16x20-ft. room is entirely under the rock, has a concrete block front wall, steel door and a concrete eave sealing to the rock and projecting 12 in. out from the wall. Steel beams support the roof stratum forming the ceiling. The ribs or walls are plastered.

Heat radiating from the floor, roof and walls, which tend to remain at normal rock temperature of approximately 60 deg. F., never permits the room to get very cold in winter and consequently only a small electric heater is necessary. On hot summer days, the rock absorbs heat from the air entering through the door which usually is left open.

Meet us at the 1949 Coal Show in Cleveland,
May 9-12. Booth A-434



Thermoid Impregnation Process Assures Longer Hose Life

In mining operations where the going is tough and hose hazards such as sharp heavy rocks, abrasion, heat, moisture and acidity are encountered, you can safely specify Thermoid hose. *Thermoid makes a complete line of quality hose... specially built to meet every demand of mining service.*

If you use hose for handling air, water, steam or oil... there is a Thermoid hose "built for the job"... each designed for highest operating efficiency.

For quick service call the nearest Thermoid distributor. Thermoid sales engineers are available for advice on special problems.

It will pay you to *Specify* Thermoid!

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.



The Thermoid Impregnation Process

insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasion action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound is impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.

Thermoid
Company

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U. S. A.
Industrial Rubber Products • Friction Materials • Oil Field Products

Bronze Bearing and Pin Improves 90-Deg. Shaker Unit



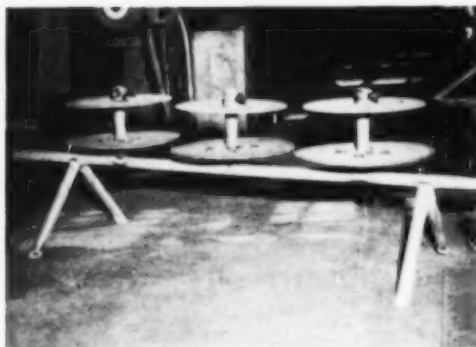
THE ANGLE PAN and bellcrank can be easily disconnected from the jack by lifting out the elongated flat-head steel pin.

FIVE YEARS' EXPERIENCE with an angle pan, bellcrank and jack unit designed and built at the mine shop by M. L. Shipwash, vice president, operations, and W. L. Shipwash, chief electrician, has proven it to be a valuable addition to underground equipment at the Hickey mine of the Diamond Coal Mining Co., Caryville, Tenn. In this 28-in. seam, the original type of 90-deg. unit was difficult to move and the jack often worked loose as a result of lost motion caused by rapid wear of the bellcrank pivot.

With this new design, the bellcrank and 90-deg. pan can be disconnected from the jack by pulling a short 2½-in. steel pin which has an elongated flat head to keep it from turning in the holes in the jack base. The pin bearing in the bellcrank is a renewable bronze sleeve.

In this mine, which produces about 200,000 tons per year, rooms are driven 50-ft. wide and the coal is hand-loaded onto the shakers. Since the angle pan and face line must be moved forward each cut, the greater ease of handling the improved angle unit saves considerable time.

Unit-Mounted Cable Reels Ease Conduit Wiring



ELECTRICIANS at the Reliance mine, Crowe Coal Co., Clinton, Mo., are making good use of a new shop-built unit that makes it easier to pull electrical cables through a conduit for single- or three-phase wiring. The new unit, shown in the accompanying photograph, is made up of three cable reels made of scrap-steel plate and pipe mounted as a group on a framework of scrap-steel pipe. Construction is welded throughout. The reels turn freely to pay out cable as needed. Each reel is made up of a lower disk 20 in. in diameter and an upper disk 18 in. in diameter, plus a core of 1½-in. pipe. Now, using the new unit, electricians can pull cables through conduit without fear of snarling or tangling at the far end of the conduit. Each reel holds up to 500 ft. of cable.

THREE CABLE REELS mounted as a unit prevent tangling when cables are pulled through conduit.

Goggle Cleaning Made Easy

TO ENCOURAGE workers to keep their goggles clean and thus to secure improved safety and better workmanship, goggle-cleaning stations, like the one shown in the accompanying photograph, have been installed in the electrical shop and the machine shop near the mine office and in both pit shops of the Pittsburg and Midway Coal Mining Co., Scammon, Kan. Each station provides a bottle of cleaning fluid capped by an atomizer spray, a self-dispensing box of soft, absorbent paper tissues especially manufactured for cleaning lenses and a small mirror about 4 in. in diameter. These goggle-cleaning stations are a product of Riggs Optical Co., 18 S. Michigan Ave., Chicago.



GOGGLE-CLEANING STATION encourages workers to keep lenses clean, thus assuring safer work and better workmanship.


How About It?

EVEN THOUGH you may have profited from some of the ideas appearing in this section, are you getting the full credit and recognition from your associates and other mining men that publication of your own operating ideas here might bring? Send us the mechanical, electrical, safety or operating ideas that have worked for you. COAL AGE, incidentally, will pay you on publication \$5 or more for each.

Add Up the Savings with

Gulf Mining Machine Lubricant B

\$	1. lower maintenance costs	
\$	2. reduced out-of-service time	
\$	3. simplified lubrication storage and handling	
\$		

\$  your total savings

1. Gulf Mining Machine Lubricant B eliminates lubricant throwoff and channeling, prevents the entrance of abrasive coal dust in gear cases, reduces wear, and resists the washing action of water. As a result, repair and replacement costs go down and stay down.

2. Improved lubrication with Gulf Mining Machine Lubricant B means fewer breakdowns, less time in the shop—which add up to greater tonnage.

3. With just this one lubricant—Gulf Mining Machine Lubricant B—you can do the entire lubricating job on most types of mining machines. Thus you eliminate 2 or 3 other lubricants, insure less confusion at the face, prevent application mistakes.

To get the many benefits possible with this quality lubricant, and for expert help on other phases of improved lubrication, call in a Gulf Lubrication Engineer.



Gulf Oil Corporation • Gulf Refining Company

Division Sales Offices: Boston • New York • Philadelphia • Pittsburgh
Atlanta • New Orleans • Houston • Louisville • Toledo



Manhattan Belting Engineers set out specifically to solve the problem of lowering conveyor belt maintenance costs. They designed a belt that troughs easier in the idlers; a belt that cushions impact of heavy shock loads with a rebounding quality that means longer belt life.

The new conveyor belt was named HOMOCORD, a homogeneous rubber-and-cord construction that soon inspired the term, "Rippling Muscles". It flexes and absorbs the terrific punishment of long mine loads like the muscles of a mighty wrestler's back. Homocord

construction is made *only* by Manhattan and designed *only* for conveyor belt use.

If you haven't "discovered" Homocord, be sure to ask for a demonstration of its cost saving advantages in your mining operations.

RAY-MAN RAYON CORD "TENSION MASTER"

For longer lifts requiring fewer transfer points . . . another Manhattan Conveyor Belt Development.

Keep Ahead with Manhattan

Complete Line for Mines

Hose, Transmission Belting, Trolley Wire Guard and Other Rubber Products Engineered by Manhattan with 56 Years of Leadership in Service to Mining



RAYBESTOS - MANHATTAN INC.

Mechanical Rubber Products — Rubber Covered Equipment — Friction Material — Asbestos Textiles
Sacrifices — Powdered Metal Products — Abrasives & Diamond Wheels — Bowling Balls

MANHATTAN RUBBER DIVISION

PASSAIC, NEW JERSEY

News Round-Up



Stocks Down as "Memorial" Halt Ends; Boyd Confirmed

HINTING AT a later stoppage to enforce wage and other demands, John L. Lewis ordered idle miners back to work March 28 after a two-week halt had cut coal stocks and forced coal railroads to lay off workers.

Anthracyte and bituminous miners east of the Mississippi had failed to report for work March 14 in response to Mr. Lewis' order that they quit operations for two weeks as a "memorial" to miners killed and injured in 1948. Citing the contract clause permitting the U.M.W.A. to "designate memorial periods provided it shall give proper notice to each district," Mr. Lewis added that the "period of inaction" would emphasize the union's opposition to Senate confirmation of Dr. James Boyd as director, U. S. Bureau of Mines. Dr. Boyd now is serving his fourth "recess" appointment and for the most part has drawn no pay since he was named to the post in March, 1947.

Dr. Boyd was confirmed by the Senate March 22. Earlier, as the stoppage got under way, the Senate Committee on Interior and Insular Affairs, stung by Mr. Lewis' attempt to dictate a turn-down, had voted 10 to 1 to recommend confirmation. Meanwhile, pickets showed up at scattered non-union mines in Western Pennsylvania and West Virginia in an effort to put a stop to all coal production and major coal-carrying railroads began laying off close to 70,000 workers. The only island of activity in coal fields east of the Mississippi was in Illinois, where P.M.W.A. miners were on the job. Various sources estimated coal tonnage losses in the two-week period would be 20,000,000 tons and miners' wage losses \$68,000,000.

Coal-industry leaders, anthracite and bituminous, reacted publicly to the stoppage with charges that Mr. Lewis had violated the contract and that his main motive was to whittle down the 70,000,000-ton bituminous stockpile, enough for 45 days, to strengthen his position for forthcoming wage negotiations in May. Also, some sources saw in the stoppage Mr. Lewis' first move in the direction of equalizing work opportunity for

Featured in This Section

Personal Notes	p. 122
Obituaries	p. 122
Coal Men on the Job	p. 124
Association Activities	p. 128
Editorial—J. H. McGraw Jr.	p. 128
New Developments	p. 133
Coal and Business Activity	p. 142
Foreign Developments	p. 150
Preparation Facilities	p. 156
Coal Publications	p. 158

miners, a step he threatened at the union's annual convention in Cincinnati last October.

Granting that industrial stocks of bituminous seemed ample though spotty, the National Coal Association declared that retail yards on Feb. 1 had only seven days' supply on hand. In the anthracite region, it was predicted that homes and small industries soon would suffer for want of coal. Because of an unusually warm winter, anthracite output through March 6 was reported to be 33.5 percent under the same period in 1948, with most mines working only two to three days a week prior to the stoppage.

Privately, some industry observers, speculating on the probable results of the mine halt, predicted that Mr. Lewis' action would assure Senate confirmation of Dr. Boyd, bolster supporters of the Taft-Hartley Act and strengthen bituminous prices, which recently have declined in some areas.

It was generally conceded that one of Mr. Lewis' motives in ordering the stoppage was to highlight his demand that federal mine inspectors be empowered to enforce safety regulations in the mines. Earlier, a veiled hint of this motive and of the stoppage to come was given out by John Owens, the union's secretary-treasurer, who told a Senate committee on March 7 that "there may come a day when they [i.e., the miners] will refuse to go down in the mines until those things so long complained of are corrected." Mr. Lewis is reported to be backing a bill introduced by Senator Matthew M. Neely, West Virginia,

which would give federal inspectors the authority to shut unsafe mines. A Senate committee already has turned down a bill, introduced by Senator E. C. Johnson, Colorado, which would have compromised the dispute over Dr. Boyd's confirmation by setting up a separate safety bureau within the Department of the Interior but independent of the Bureau of Mines.

Earlier, on Feb. 28, the U.M.W.A. filed a brief and exceptions to the finding of a NLRB trial examiner on Jan. 18 that the present union-shop clause in the agreement between the union and 18 steel companies is illegal. William R. Ringer, the trial examiner, ruled that the clause violated the Taft-Hartley Act because a majority of the employees had not authorized the union shop in a government-conducted election. Failure to hold an election was due to Mr. Lewis' refusal to sign the anti-Communist affidavit required of labor-union officials who seek protection of the act.

The union's brief and exceptions argued that the mineworkers' last convention had authorized the policy committee to negotiate a contract containing a union-shop clause. Further, the brief contended the clause was valid because, among other reasons, it had resulted from conferences held and guided by Associate Justice T. Alan Goldsborough following the captive-mine shutdown last July. If necessary, the union is expected to carry the case to the Supreme Court.

1948 Bituminous Payroll Three Times 1939 Total

The annual payroll of wage earners in the bituminous coal industry exceeded 1½ billion dollars in 1948, which was more than three times as much as the wage payroll in 1939. Bituminous Coal Institute reported last month.

The number of wage earners in 1948, according to the Bureau of Labor Statistics, was 393,000, which was larger than in any year since 1944, when the total was 401,000. For the wartime peak of 1942 the total was 455,000. In 1939, workers totaled 372,000.

At the end of 1948, payments to workers receiving wages were averaging \$1.95 an hour, compared with \$0.89 in 1939.



COMPANY OFFICIALS, U.M.W.A. leaders and state and federal bureau men talk safety at . . .

Third Annual Red Jacket Safety Management Dinner

SHOWN AT the Third Annual Safety Management Dinner sponsored by the Red Jacket Coal Corp., Red Jacket, W. Va., in the interest of safety cooperation, are company officials, local and district U.M.W.A. officials and representatives of the W. Va. Department of Mines and the U. S. Bureau of Mines.

The meeting, which was held Feb. 19 at the Mountaineer Hotel, Williamson, W. Va., was opened by R. A. Ison, Red Jacket, assistant general manager, who stressed the importance of getting together, especially in safety matters, and expressed the hope that the meetings would continue in the future. Mr. Ison introduced Charles Kiser, representative,

District 17, U.M.W.A., who acted as the toastmaster for the dinner. During the course of the meeting U.M.W.A. officials of the various Red Jacket Locals were introduced to the group.

In his remarks, J. J. Plasky, Red Jacket training and safety director, reported considerable progress in accident prevention, especially since inauguration of the labor-management safety meetings.

Other speakers included: W. H. Tomlinson and A. U. Miller, supervising engineers, U. S. Bureau of Mines; John Hansford, director of mine rescue and safety, W. Va. Department of Mines; Lee Burke, representative, District 28, U.M.W.A.;

M. J. Ankeny, chief, Coal Mine Inspection Division, and J. J. Forbes, chief, Health and Safety Branch, U. S. Bureau of Mines; and William M. Ritter, Red Jacket general manager.

The importance of cooperation in accident prevention, and the credit due such cooperation in the progress made to date, were stressed in letters read at the meeting received from J. W. Damron, chairman of the board, and P. D. Ritter, president, Red Jacket, and from William Blizard, president, District 17, U.M.W.A. All the speakers commended the company, its officials and the rank and file of the U.M.W.A. for their efforts and accomplishments in achieving greater safety in the mines.

Consol (Ky.) Disposes of Jenkins Town Properties

Consolidation Coal Co. (Ky.) has reported that it completed Feb. 1 the sale of all its houses in the town of Jenkins, Ky., a city of 10,000 population. Jenkins has been the largest "company" town in Kentucky and one of the largest in the United States.

When the company first started operations in Letcher County nearly 40 years ago, in a section which was practically a wilderness, it felt it was not only necessary but a duty to provide dwelling houses, churches, schools, hotels, soda fountains, hospital, undertaking establishment, pool halls, a fire department, municipal buildings, lodge halls, water and light facilities, etc., for the benefit of its employees.

In recent years, with the advent of good roads, and the desire of many life-long residents of Jenkins to own their homes, Consol considered it no

longer necessary to retain ownership of such properties. In the latter part of 1946, it was instrumental in the formation of a real estate agency to handle the sale of houses to employees on the installment plan. At the same time, it offered for sale to private interests those businesses and facilities it had operated so long. Consequently, the company now possesses only its main office building in the heart of the business district, but it does, of course, retain a sizable investment within the corporate limits of the town, including shops, a coal-cleaning plant and other buildings.

Church buildings generally were donated to the denominations. School buildings, municipal buildings, lodge halls, recreation buildings, hotels, hospital, etc., were sold or donated, as were many choice lots on which privately-owned business houses have been erected. Water and light facilities were sold to public utilities.

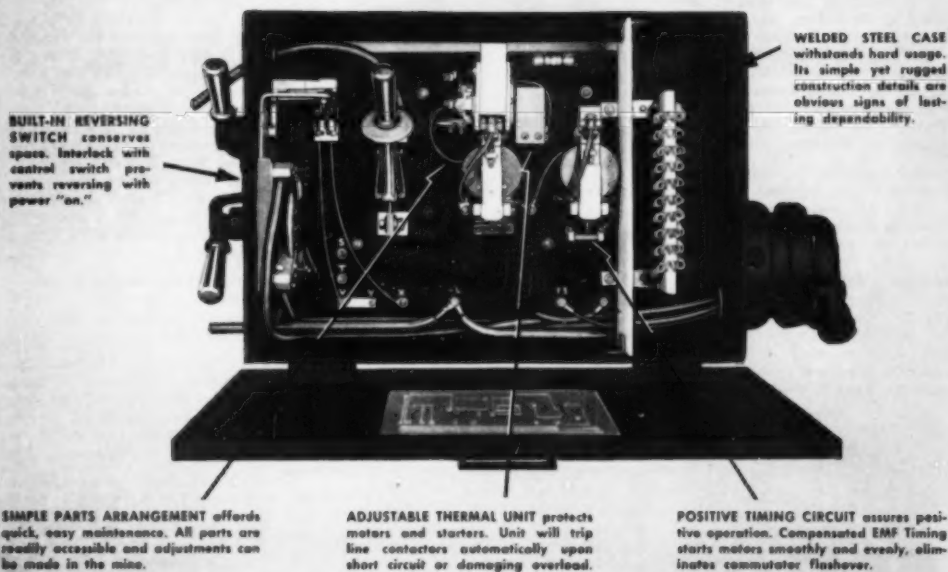
Thus in the short span of two years, Consol reports, the city of Jenkins has

undergone a complete transformation. There probably is not another large coal mining town in the United States in which a mining company has so completely divested itself of public and private properties and reverted to its primary business of mining coal, it points out.

Pittsburgh Consolidation Cuts Bituminous Price

A reduction of 15 to 40c. a ton in Northern West Virginia industrial bituminous coal was announced early last month, effective April 1, by the Pittsburgh Consolidation Coal Co. The break, which was announced before the calling of the "memorial" stoppage by John L. Lewis, is the first of any consequence since the war. It had been expected that the larger competitors of Pittsburgh Consol. would follow suit, but with the "memorial" cutting off coal supply the possibility was indefinite.

More for your money...



O-B MOTOR STARTERS *are built for hard mine usage...*

Control equipment dollars go farther when they are invested in O-B Automatic Motor Starters. Not that the initial cost is less . . . but they last longer, require less maintenance and operate with less supervision than other similar equipment. A glance at the case and the inside of the O-B

Starter shown here tells the reasons why . . . You can get the benefit of these dollar-saving advantages by specifying O-B Starters on your next equipment order. They are available for either gas-free or gaseous service.

3015-M

Ohio Brass

MANSFIELD, OHIO

Canadian Ohio Brass Company, Limited
Niagara Falls, Ontario

Personal Notes

Homer Morris, production foreman since 1944, has been named superintendent, Wolf Run mine, Warner Collieries Co., Wolf Run, Ohio, succeeding **Tom Patterson**, resigned. Before joining Warner, Mr. Morris was associated with the Y. & O. Coal Co. as superintendent of its Barton and Amsterdam mines. **Ted Gregor**, face foreman at Wolf Run, has been appointed production foreman to replace Mr. Morris. **Floyd Morgan** has been made face foreman in Mr. Gregor's place. **Irving Foote**, formerly assistant to the personnel director of the Glidden Co., has joined the personnel department of Warner Collieries.

Several changes in the engineering department, Coal Division, Eastern Gas & Fuel Associates, have been announced. **E. D. Conaway Jr.** has been promoted to assistant mining engineer in the Pittsburgh engineering department. **William Laird**, formerly resident engineer at Sonman, has succeeded Mr. Conaway as resident engineer at Kopperston. **J. M. Baker**, project and planning engineer in Pittsburgh, has been transferred to Sonman as resident engineer. **F. W.**



EARL F. MAURER, general superintendent, Rail & River Coal Co., Bellaire, Ohio, has been named president and general manager of the company, succeeding John T. Sydnor.

Riddle, resident engineer, Wharton No. 1, has been transferred as resident engineer, Wharton No. 2, succeeding **John G. Bryson**, resigned. **W. W. Mabe**, formerly transitman at Eccles and draftsman at Kopperston, has been made resident engineer at Wharton No. 1.

Earl Hopkins, general night foreman, No. 19 mine, West Virginia Coal & Coke Corp., Stirrat, W. Va., has been appointed general mine foreman. Before joining the company in 1945, Mr. Hopkins was employed by Consolidation Coal Co. (Ky.) for 17 years, serving as section foreman and later as assistant night foreman. **Paul Pichardo**, section foreman at No. 19, has been promoted to general night foreman, succeeding Mr. Hopkins.

Jack Foehrer, formerly loader operator, Red Ray mine, United Electric Coal Cos., has been made pit foreman at the Clinch pit of the company's Fidelity mine, DuQuoin, Ill.

H. W. Bradbury, Sparta, Ill., has reported that he has disposed of his interest in the Mid-Continent Coal Corp., Chicago, operator of the Green Diamond mine at Marissa, Ill., and has resigned as vice president, director and general manager of the company. Mr. Bradbury, who also is president and general manager, Sparta Coal Co., affiliated with the Simpson Creek Collieries Co., is reported to have been engaged in consulting work for Simpson Creek during recent weeks. The Green Diamond mine, down since Jan. 11 in a jurisdictional dispute between the P.M. W.A. and the U.M.W.A., was reported early in March still closed, pending efforts of the Illinois Department of Labor to secure a settlement.

Chester C. Cook, formerly executive vice president, has been elected presi-

dent and chairman of the board, Sunday Creek Coal Co., Columbus, Ohio, succeeding the late **George K. Smith**.

Paul R. Paulick, consulting engineer, Library, Pa., sailed last month for Japan to serve as a consultant on rehabilitation of Japanese coal mines. He will be a member of General MacArthur's advisory civilian technical staff. Mr. Paulick spent several months in China last year as a representative of ECA's coal mining division.

Frank White, assistant vice president and mining engineer, Peabody Coal Co., Chicago, and **Walter Vesper**, Staunton, Ill., have been appointed members of the Illinois state mining board, filling vacancies caused by the resignations of **Ben H. Schull**, Marion, and **William Keith Sr.**, Gillespie. Mr. White will be the representative of the Illinois Coal Operators' Association and Mr. Vesper will represent the Progressive Mine Workers of America.

James C. Faith, Graham, Ky., has been appointed a Kentucky district mine inspector, succeeding **John H. Combs**, Hazard, Ky.

Harry J. Evans and **Richard A. Suppes**, mining engineers, Pierce Management, Scranton, Pa., left for Korea March 9 to study the economic potentialities of four coal fields in southern Korea.

Lyman Fearn, Rock Springs, Colo., has been appointed a Colorado state mine inspector, succeeding **Hugh MacLeod**, also of Rock Springs.

Obituaries



Charles O'Neill, 61, widely known to the press and the public throughout the nation as the spokesman for bituminous coal operators in wage contract negotiations, died Feb. 27 in the New Rochelle, N. Y., Hospital, following a week's illness. At the



JOHN M. CONNOR has been elected vice president, Allegheny Pittsburgh Coal Co., and vice president and director, Windsor Power House Coal Co., subsidiaries of the West Penn Power Co., Pittsburgh, Pa. Mr. Connor joined West Penn in 1920 as a mining engineer in charge of field work in the development of its Beech Bottom mine and in 1934 was appointed general superintendent of mines. In his new capacity, he continues his responsibility for all West Penn mining operations. He had previously been connected with the United Coal Co., Solvay Collieries Co., Goodwill Coal Co. and Pittsburgh Coal Co. Active in many industry organizations, Mr. Connor is a past president of the Pittsburgh Coal Mining Institute and the Coal Mining Institute of America.

You are invited to see

**EUCLID COAL HAULERS
and other Hauling Equipment**

for Overburden and Gob

EUCLID

THE PIONEER

*at the
Coal
Exposition
May 9-12*

You'll want to see the 40-ton Bottom-Dump Euclid Coal Hauler and Rear-Dump models for overburden and gob hauling on display at the Coal Show. And while you are in Cleveland we hope that you'll give us an opportunity to show you the modern new factory where Euclid equipment is built. Just drop in at our exhibit and we'll arrange a plant trip at your convenience.

We are looking forward to seeing you in Cleveland and hope you'll put Euclid Headquarters on your "must" list for the Coal Exposition.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO



Cecil Bays (left), underground construction superintendent for the company, Green Conley, assistant general night foreman, Res Lawson, general night foreman, Thomas H. Childers, superintendent, and Ed Bays, general mine foreman, Mine No. 15, West Virginia Coal & Coke Corp., Stirrat, W. Va.



Fred Bowen, superintendent, New Castle mine, Windsor Coal Co., Windsor, Mo.

COAL MEN



C. B. Umphenour (left), and Carl L. Newman, supply supervisors, Hume-Sinclair Coal Mining Co., Hume, Mo.



L. H. Brady (left), dragline operator, and Herman Wilber, pit foreman, Jackson & Squires Coal Co., Mansfield, Ark.



M. F. Florjanic (left), general mine foreman, D. C. Ridenour, division engineer, R. D. Lauder, superintendent, Frank Kuchinic, night foreman, and Alphonse DeHosse, general assistant foreman, Mathies mine, Pittsburgh Coal Co., Finleyville, Pa.



V. M. Stroud, superintendent, Spiro Coal & Mining Co., Spiro, Okla.



W. L. Bounds, superintendent, Evans Coal Co., Spiro, Okla.



O. D. Bostic (left), outside foreman; R. I. Hargett, mine accountant; I. M. Page, chief electrician; Hugo Shamblen, general mine foreman, No. 5; B. W. McClung, resident engineer; Ernest Slater Jr., general mine foreman, No. 6; and A. V. Faull, superintendent, Eccles Nos. 5 and 6 mines, Coal Division, Eastern Gas & Fuel Associates, Eccles, W. Va.

ON THE JOB



T. G. Glaze (left), chief electrician, and J. W. Hanson, shop foreman, Labuco mine, Alabama By-Products Corp., Labuco, Ala.



P. M. Jones (left), tippie foreman, and R. H. Bradley, shop foreman, Crowe Coal Co., Clinton, Mo.

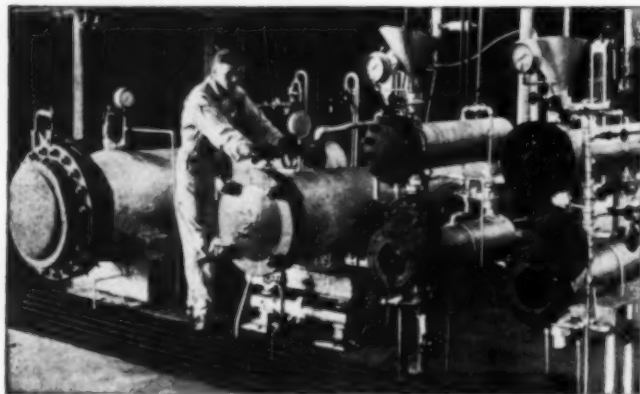


E. E. Whitten, tippie foreman, Evans Coal Co., Spiro, Okla.



C. J. King (left), chief electrician, and C. M. Bengt, superintendent, Glen Mary Coal Co., Robbins, Tenn.; Aught Tippett, preparation foreman, Blue Rose mine, New Jellico Coal Co., Morley, Tenn.; and M. C. Haley, preparation engineer, Walter Bledsoe & Co.

These experimental wood-treating cylinders vary in size from 2" x 12" to 4' x 20'. It is possible to make detailed studies ranging from test-tube quantities to semi-commercial quantities.



HOW KOPPERS FAMOUS TECHNICAL LABORATORY

helps improve serviceability of wood

The Koppers Technical Laboratory at Orrville, Ohio is one of the most complete wood-treating laboratories in the world. Here, Koppers experts, working with the best in modern equipment, lead the field in the development of improved wood-preserveds and techniques.

In addition to other research, the staff of this laboratory is constantly working on the following projects: a continuing study of pressure-treatment with creosote; the evaluation of all known treating materials; the development of new preserveds.

►► How Koppers technical facilities can help you!

This famous Koppers Technical Laboratory is now equipped to handle your specific wood-treating problems. Its technical staff welcomes your inquiries, and will gladly recommend the *proper* technique of treatment . . . the *proper* type of preservative to meet your individual needs. Write for further information.



PRESSURE-TREATED WOOD

MEETINGS

- Midwest Power Conference: April 18-20, Sherman Hotel, Chicago.
- Canadian Institute of Mining and Metallurgy: annual meeting, April 25-27, Windsor Hotel, Montreal, Que., Canada.
- Seventh Annual Anthracite Conference: May 5-6, Lehigh University, Bethlehem, Pa.
- American Mining Congress: coal convention and exposition, May 9-12, Cleveland, Ohio.
- A.I.M.E., Central Appalachian Section: spring meeting, June 3-4, Blacksburg, Va.
- American Retail Coal Association: annual meeting, June 7-8, Hotel Cleveland, Cleveland, Ohio.
- American Coal Sales Association: annual convention, June 9-11, The Greenbrier, White Sulphur Springs, W. Va.
- Mine Inspectors Institute of America: annual meeting, June 12-15, Pittsburgh, Pa.
- Stoker Manufacturers' Association: annual meeting, June 13-14, French Lick Springs, Ind.

time of his death, Mr. O'Neill was president of the United Eastern Coal Sales Corp., New York, president of the Central Pennsylvania Coal Producers' Association and the Eastern Bituminous Coal Association, and a director of the National Coal Association.

Born near Clearfield, Pa., Mr. O'Neill went into the mines at the age of 11. Ten years later he became assistant secretary, District 2, U.M. W.A., continuing in that post for eight years. He was active in the formation of the Central Pennsylvania Coal Producers' Association and served as its secretary from 1918 to 1930. For some years he was an official of Peale, Penock & Kerr, Inc.

During the war, Mr. O'Neill was a member of the Solid Fuels Advisory War Council and chairman of the National Bituminous Coal Producers' Advisory Board, District 1. For many years he had served the coal industry in working toward the solution of major problems. His prominence in the national wage-negotiation picture began in 1933 and since that time he had spent an increasing amount of time and effort in that direction as a member of the national bituminous wage negotiating committee.

Stephen E. Clendenin, 78, president, Vera Pocahontas Coal Co., Welch, W. Va., died March 1 at his home in Roanoke, Va.

Jan Van Houten, 81, president, St. Louis, Rocky Mountain & Pacific Coal Co., Raton, N. M., died March 8 at his home in Denver, Colo. Mr. Van Houten, who was born in Holland,

**THOR MODEL 75
SINKER ROCK DRILL.**

**MORE
SHAFTS**

**ARE SUNK WITH
THE THOR "75"
THAN WITH ANY
OTHER SINKER!**

**MODEL
75**
WEIGHT 55 LBS.
LENGTH 22 3/4"
SIZE STEEL
RECOMMENDED
3/4" and 1"
HEX. or Q. O.

If any one fact stands out in the preference for Thor's great 55-pound sinker among mine operators *this is it.*

Sinking the mine shaft is the toughest test for any sinker . . . yet, in test after test against rigid competition, Thor's "75" outdrills every machine in its class . . . has been the standout choice for more shaft sinking operations than any other sinker!

See the preferred sinker *first* . . . at Thor distributors everywhere, or write for Catalog MCI.

INDEPENDENT PNEUMATIC TOOL COMPANY

AURORA, ILLINOIS

Expert Division: 330 West 42nd Street, New York 18, N.Y.

Birmingham	Boston	Buffalo	Chicago	Cincinnati	Cleveland	Denver
Detroit	Houston	Los Angeles	Milwaukee	New York	Philadelphia	
Pittsburgh	St. Louis	St. Paul	Salt Lake City	Seattle		
San Francisco	Toronto, Canada	Sao Paulo, Brazil	London, England			

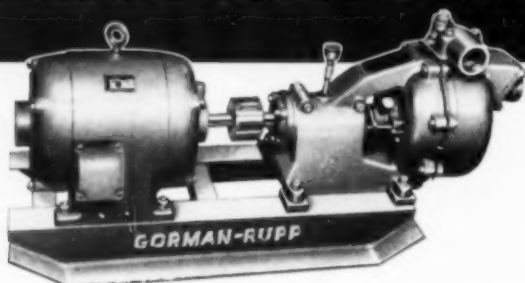
Thor

PORTABLE POWER

TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

LOW HEADROOM? *Simply Specify* GORMAN-RUPP PUMPS



A LOT OF PUMP IN A SMALL SPACE

These husky, self-priming, centrifugal mine gathering pumps will handle large quantities of water yet take unbelievably small headroom - from 13½" to 21¼", depending upon size. (pump only) Ideal for remote locations and automatic operation - requiring little or no attention, operating 24 hours a day, continuously, day after day without shut-down.

Positive and powerful self-priming. No adjustments required between prime and run - start the motor and you start the water.

Sand, muck or solids that will pass the intake strainer WILL NOT CLOG or harm a Gorman-Rupp.

Absolute Simplicity - only one moving part, the impeller - no reduction gears or valves. All wearing parts can be quickly replaced by an inexperienced man with common tools.

You can't beat a Gorman-Rupp for dependability and performance. Available in capacities from 50 to 200 GPM and heads up to 125 feet. Write today for special mine bulletin showing some interesting actual installations, or contact your nearest distributor.

Check THIS LIST FOR YOUR NEAREST GORMAN-RUPP DISTRIBUTOR.

Guyan Machinery Co., Logan, W. Va.
Weinman Pump & Supply Co., Pittsburgh, Pa.

McComb Supply Co., Harlan, Ky.
Bittenbender Co., Scranton, Pa.
Industrial Supply Co., Terre Haute, Indiana

Hoe Supply Co., Christopher, Ill.
Greenville Supply Co., Greenville, Ky.
General Machinery Co., Birmingham, Ala.

Superior Sterling Co., Bluefield, W. Va.

Athens Armature & Machinery Co., Athens, Ohio

Tennessee Mill & Mine Supply Co., Knoxville, Tenn.

Mine Service Co., Lothair, Ky.

Reliable Electric & Equip. Co., Zanesville, Ohio

Cambridge Mach. & Supply Co., Cambridge, Ohio

Medico Elec. & Motor Co., Pittston, Penna.

Buckeye Machine Supply Co., New Philadelphia, Ohio

W. Va. Pump & Supply Co., Huntington, W. Va.

Central Mine Supply Co., Mt. Vernon, Illinois

THE



GORMAN-RUPP COMPANY

305 BOWMAN STREET, MANSFIELD, OHIO

came to the United States when he was 19. He formed the St. Louis, Rocky Mountain company in 1905 and continued active in its management until his death. He moved to Denver in 1937.

George K. Smith, 65, president and chairman of the board, Sunday Creek Coal Co., Columbus, Ohio, died Feb. 18 at his home in Columbus. Long identified with the bituminous coal industry, Mr. Smith had been associated with Sunday Creek since 1908 and had been president of the company since 1930.

Association Activities



LEWIS E. YOUNG, Pittsburgh, Pa., newly installed president, A.I.M.E.

A.I.M.E., at its 77th annual meeting in San Francisco in February, officially installed Lewis E. Young, Pittsburgh, Pa., as president of the institute. Andrew Fletcher, A.I.M.E. vice president, was made treasurer in addition; and Edward H. Robie, acting secretary, was confirmed as secretary. E. R. Price, general superintendent, Inland Steel Co., Wheelwright, Ky., took office as chairman of the coal division. Newly elected directors of the institute were: William J. Coulter, Climax Molybdenum Co.; James L. Head, Anaconda Copper Mining Co.; W. M. Peirce, New Jersey Zinc Co.; and George P. Swift, Waltham, Mass.

Western Kentucky Mining Institute recently elected Lindsay Cobb, Nortonville, Ky., president for the remainder of 1949, to fill the vacancy caused by the resignation of Andrew Roark, Graham, Ky. A. L. Bishop, Madisonville, moved up from second to first vice president, to replace Mr. Cobb; Charles Eli, Dawson Springs, from third to second vice president; and Edwin McGraw, Wheatcroft, was made third vice president.

The Election of November 2, 1948 **GAVE NO MANDATE FOR SOCIALISM**

The President and those who support his legislative program have objected to the substance of my previous editorial, which appeared under this headline: "Now is the Time to FIGHT SOCIALISM in Washington."

In that editorial I explained how Washington is poised to follow the disastrous policy of forcing industry to skimp on new plants and new equipment. That policy landed Britain in the numbing embrace of the Socialists. I cited the experience of Britain to show how such skimping on industrial tools can bring a nation to economic stagnation . . . and Socialism.

The President, in his recent Jackson Day speech, brushed aside this warning . . . "They are again trying to frighten the people with the old worn-out bugaboo that Socialism is taking over in Washington." Senator Francis J. Myers of Pennsylvania asserted that I was guilty of "warfare against any reasonable effort to keep our system of free enterprise working."

These criticisms may be sincere. But they are not well-founded.

I want to show why they are not well-founded

by basing this editorial on Washington rather than Britain.

In Washington the Administration has proposed a legislative program, the key parts of which would clearly put the country far on the road to Socialism. Let us see how.

There are two steps in the process:

FIRST: The government by its taxation program undermines private industry so that it cannot provide itself with the necessary new plant and tools.

SECOND: The government itself steps in to provide the plants and equipment that it has blocked industry from getting. *That is Socialism.*

Here is how Washington is promoting Socialization of the steel industry—and of other industries.

Steel has been expanding its capacity and improving its equipment chiefly by plowing back its profits. During the last three years it has spent \$1.4 billion for new plants and new tools. That was more than the companies had available from their own earnings. But profits provided more

continued on next page

than half of that money—more than \$700 million. The remainder came from loans and from depreciation reserves set aside out of the earnings to replace worn-out equipment.

Profits must continue to provide the funds needed to pay for the bulk of the steel industry's necessary expansion. That is because private citizens, their income slashed by heavy taxes, have not been willing to buy steel stocks even at prices ruinously low for the companies and their present stockholders. The stock market currently prices the mills and other facilities of the nation's principal steel-producing companies at far less than fifty percent of the cost of reproducing them.

Let us take another example. Profits are essential to expansion in the electric light and power industry also. This year private companies are planning to buy \$2 billion worth of new plant and equipment. To do that without going overboard in debt, they must sell to the public some \$300 million worth of common stock. A squeeze on their profits would make that sale virtually impossible.

For tens of thousands of small business enterprises profits afford virtually the only practical source of funds for new equipment and expansion.

In the face of these and many other examples that might be cited, what is the most effective way to prevent industry from re-equipping itself and expanding its capacity to meet our essential needs?

Obviously, it is to cut down profits. And that is what the Administration is trying to do. The President has declared that steel prices are too high, and is demanding that Congress raise taxes sharply on all corporations.

There you have the first step toward socializing industry.

Next comes step two. Have the government supply the tools and equipment which, by taxation, it prevents industry from getting.

The Administration has proposed legislation to carry out this second step. It is called the

"Economic Stability Act of 1949," for short, the "Spence Bill."

This bill gives the President the power to provide industrial facilities—in steel, power or any other industry—where he finds that a shortage is hampering or is likely to hamper the economy.

True, the bill says that the government is not to construct new plants if private companies will do it through government loans, on terms prescribed by the President. That may be just one step short of complete socialization. But it is only a short step. And the Spence Bill authorizes the government to take that step.

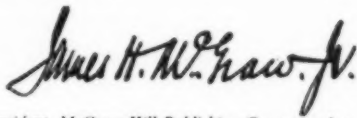
By itself, the Administration's "Stability Act" sounds harmless enough. It would have the government build plants only as a last resort. But it provides also that if private enterprise cannot turn out all the goods the country needs, the government can and should step in and provide the equipment to do it.

Now, take that power together with an Administration tax program that undercuts the ability of private enterprise to supply the new plants and equipment it needs out of its own earnings. That combination promotes government ownership and operation of industry.

And that is Socialism.

The American people, of course, have the right to live under any system they choose—Capitalism, Socialism, Fascism, Communism, or what-have-you. But before Socialism or any other "ism" is imposed upon us from above, the people should know the facts. If this editorial shall have contributed in some small degree to that end it will have served its purpose.

The election of November 2, 1948 gave no mandate for Socialism.



President, McGraw-Hill Publishing Company, Inc.

NO CABLE LIKE IT!



**CUTS
SHORTS**

SECURITYFLEX *Safety Firsts*

- *First* to comply with U.S. Bureau of Mines Flame Test and Pennsylvania Flame Test. (Insist on mark of full compliance—P-102-BM—at 12' intervals.)
- *First* neoprene treated Glass Cord Reinforcing—stops wicking of moisture, conducting of stray currents, increases strength.
- *First and only* Anti-Short Breaker Strip* construction—cuts short circuits between conductors.
- *First* parallel mine cable with ground wire.
- *First and only* D-Shaped* insulation—prevents overriding of conductors.
- *First* to have insulation and outer jacket bonded together—to form a solid block around conductors.
- *First* with smaller diameters that pack more on a reel, ease handling.

*Reg. U.S. Pat. Off.

SECURITYFLEX **PARALLEL MINE CABLE** **with BREAKER-STRIP***

THE PATENTED anti-short breaker-strip construction of Securityflex Parallel Mine Cable is an exclusive development of Anaconda Wire & Cable Company. No other mine cable gives you this protection against shorts between conductors, even under the heaviest impact.

Breaker-Strip (available with or without ground wire) is only one of the many Securityflex features. Add up the advantages of Anaconda's specially compounded, extra tough neoprene jacket . . . non-kinking construction . . . improved heat-resisting synthetic rubber insulation . . . superior manufacturing techniques . . . the *Safety Firsts*.

Call your local Anaconda distributor (located in all principal cities) about Securityflex—the cable that takes a beating *and likes it!* Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

4005

ANACONDA

Securityflex

MINE CABLE



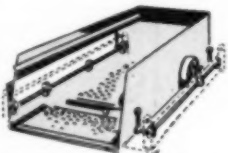


Get your share of the market—screen your coal with a SECO VIBRATING SCREEN

Are you prepared to meet the increasing demands for clean, properly-sized coal? You can be, with a Seco Vibrating Screen on the job for you. From scalping lumps out of R.O.M., to complete sizing, there's a right Seco to help you meet the most exacting requirements for clean, properly-sized coal.

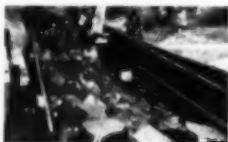
Here's how SECO engineering saves you money . . .

In outline is SECO'S patented equalizer assembly. This makes possible SECO'S fully-controlled, true circular action for peak efficiency in coal screening. SECO'S high capacity and trouble-free performance keep cost per ton screened to a minimum.



Hundreds of coal operators report enthusiastic results

After all, the proof is in performance. We invite you to join with hundreds of other coal operators who are getting clean, properly-sized coal with SECO VIBRATING SCREENS. Our engineers will be glad to make recommendations for your individual requirements.



Write Dept. CA-4 for your copy of
SECO COAL SCREENING BULLETIN NO. 11

SCREEN EQUIPMENT CO., INC.
1750 WALDEN AVENUE, BUFFALO 21, N.Y.

In Canada: United Steel Corp., Ltd., Toronto

SECO



New Developments

● The Monongahela Ry. announced last month that an application was being filed with the ICC for authority to construct and operate an 8.32-mile extension of its Paw Paw branch beyond its present terminus at Grant Town, W. Va., to a point near the headwater of Sugar Run. The new extension, work on which is to begin as soon as authorization is secured, is expected to permit development of a large reserve of unmined coal. The line will be built in the valley of Paw Paw Creek to the mouth of Sugar Run, and then up the valley of Sugar Run, all in Marion County.

● The new drift mine in the Coalburg seam under development by the Red Jacket Coal Corp., Red Jacket, W. Va., reportedly will begin operation in the near future. The new operation, planned for a 1,000-ton-per-day capacity, will employ belts for the main haulage and Joy loaders and shuttle cars for mining. Coal will be trucked to the company's Mitchell Branch tippie.

● The Lona No. 1 strip mine of the Industrial Contracting Co., Teter, W. Va., has been acquired by Hodgeville Industrial Coals, Inc., Clarksburg, W. Va. The operation mines the Redstone seam and has a capacity of 2,750 tons daily. Shipments are made via the B. & O. R.R.

● The G. A. Stiles Co., Leeper, Pa., has purchased and is operating the Straitiff No. 8 strip mine of the Leeper Coal Co., Tylerburg, Pa. The Clarion seam is being mined and capacity of the operation is 650 tons daily. Shipments are made via the B. & O. R.R. over a tippie that includes a crusher and screens.

● The new mine of the Silver Star Coal Co., Silver, Ky., reportedly is now loading 200 tons per day on a development basis. The Darby seam is being mined and shipments are made on the L. & N. Guy B. Darst, St. Charles, Va., is president of the company and St. John Reynolds, Knoxville, Tenn., is vice president.

● The Miniard Coal Co., recently organized at Cornettsville, Ky., reportedly is planning development of a 500-ton-per-day truck mine near Cornettsville, in the new Leatherwood Creek area near the Letcher-Perry county line. Coal will be shipped over the L. & N. Arthur, Delno and Allison Miniard are organizers of the firm.

● The East Kentucky Coal Cleaning Co., Hazard, Ky., has been organized by R. R. Bunton, R. H. Kelley and Huston St. Clair to clean and market truck-mine coal produced in the Hazard field. The company is reported to also be planning development of a new truck-mine operation near the Letcher-Perry county line. Capacity will be 300 tons daily.



DRIVE PROVED Dayton V-Belts

AS NEAR AS YOUR TELEPHONE

A new V-Belt service by Dayton, to save you time and money three ways:

1. "Drive Proved" V-Belts—the right belt for your particular drive. For Dayton has made more than 100 million V-Belts. They have been "Drive Proved" in every kind of industry, under every possible operating condition of heat, cold, dirt, dust and oil. They have proved their ability to save space; provide positive power; start and stop smoothly; run quietly, without vibration and last longer than any ordinary belt.

2. As Near as Your Telephone. There is a Dayton V-Belt Distributor near you. He is equipped with the specialized knowledge to recommend the right drive for you. You'll find him listed in the classified section of your telephone directory or his representative is now calling at your plant.

3. Instant Maintenance Service from Local Stocks. Your Dayton Distributor maintains complete stocks of Dayton "Drive Proved" V-Belts and

pulleys. He is prepared to give you instant service for existing or future drives, and to provide you with an immediate source of mill supplies.

Put this new service to work in your plant now. Equip your drives with Dayton "Drive Proved" V-Belts and be sure you are getting the maximum in drive performance and service. Call your Dayton V-Belt Distributor today. *The Dayton Rubber Company, Dayton, Ohio.*

**ONLY Dayton V-Belts
are "DRIVE PROVED" for the Job!**

Dayton Thorobred—for normal and heavy duty drives.
Dayton FHP—for small machines and appliances.
Dayton Cog—for shortest centers, smallest pulleys.
Dayton Steel Cable—for extreme loads and speeds.

ALL STOCKED BY YOUR LOCAL DAYTON V-BELT DISTRIBUTOR

Dayton Rubber

"VIC" TELLS HOW

VICTAULIC COUPLINGS AND FULL-FLOW FITTINGS SAVE MONEY!... TIME!... LABOR!

VICTAULIC COUPLINGS add flexibility to any piping system—allowing pipe lines to follow construction and land contours without costly, engineered-alignment.

... they also form a union at every joint—permitting quick, easy removal of fittings or pipe lengths for repair or replacement without damage to pipe ends, without having to back off adjoining sections.

... and they have a two-bolt simplicity of construction that lets pipe lines be assembled without specially trained labor—and with a standard T-wrench the only tool needed.

VICTAULIC FULL-FLOW ELBOWS, TEES, and other Fittings have wide-sweeping turns and true-circular inner walls that reduce frictional losses to a minimum... increasing pipeline output at lower pumping costs!

AND OUR "VIC-GROOVER" grooves pipe ends twice as fast—with only half the effort of ordinary pipe threaders!

WRITE TODAY for these two: Victaulic Catalog and Engineering Manual No. 44... "Vic-Groover" Catalog No. VG-47.

FOR ECONOMY...MAKE YOUR PIPING SYSTEM ALL VICTAULIC!



SELF-ALIGNING PIPE COUPLINGS

VICTAULIC

EFFICIENT FULL FLOW FITTINGS

VICTAULIC COMPANY OF AMERICA

30 ROCKEFELLER PLAZA, N. Y. 20, N. Y.
Victaulic Inc., 727 W. 7th St., Los Angeles 14, Cal.
Victaulic Co. of Can. Ltd. 200 Bay St., Toronto 1

For Export outside U. S. and Canada: PIPCO
Couplings and Fittings - Pipe Couplings, Inc.,
30 Rockefeller Plaza, New York 20, N. Y.

Copyright 1949, by Victaulic Co. of America

EQUIPMENT APPROVALS

Five approvals of permissible equipment were issued by the U. S. Bureau of Mines in February, as follows:

Joy Mfg. Co.—Type 60D3P battery-operated shuttle car; three motors, each 7½ hp., 90 volts, d.c.; Approval No. 2-653; Feb. 3.

Chicago Pneumatic Tool Co.—No. 580 post drill; one motor, 4¼ hp., 220/440 volts, a.c.; Approval Nos. 2-654 and 2-654A; Feb. 8.

Brown-Fayro Co.—Model BC tubing-blower drive unit; one motor, 5 hp., 220/440 volts, a.c.; Approvals Nos. 2-655 and 2-655A; Feb. 9.

Goodman Mfg. Co.—Type 120 Conway shovel; one motor, 25 hp., 500 volts, a.c.; Approval No. 2-656A; Feb. 25.

Goodman Mfg. Co.—Type 660-BH tractor loader; two motors, each 30 hp., 250 volts, d.c.; Approval No. 2-657; Feb. 28.

● The Jacob Construction Co. is reported to be operating a large-scale stripping on the Kentucky River near Kona, Ky., for the Alvin Kincer Coal Co., operator of truck mines at Haymond and Kona, Ky.

● Production at the property of the Grand Teton Coal Co., near Driggs, Idaho, is to be increased from its present daily capacity of 200 tons to 500 tons this summer, and 1,000 tons during 1950, according to R. H. Russell, president. The property is understood to be operated under lease by the Idaho Coal Mining Co., formed by J. B. Williams, Turtle Creek, Pa., and associates, which has reportedly spent \$300,000 on preliminary development work, machinery and equipment. State aid in improving the present road from Driggs to the mine has been asked of the governor by Mr. Russell, who pointed out that development of coal resources in the area would attract new industry to the state.

● Large-scale stripping operations in the Philpott field near Ozark, Ark., are reportedly scheduled to be begun at an early date by the Utah Construction Co., Ogden, Utah. The company was said to have leased 500 to 600 acres of coal land and to be planning the acquisition of additional leases. A modern loading tippie on the Missouri Pacific R.R. recently completed by another organization also has been taken over.

● Closing of two operations was announced by the Pittsburgh Coal Co. last month. Reduced coal reserves, high-cost operation and easing off of coal demand were reported among the reasons cited for the action. Affected were the No. 119 mine, Jenner, Somerset County, and Midland mine, Houston, Washington County. The two mines employed about 1,000 men.



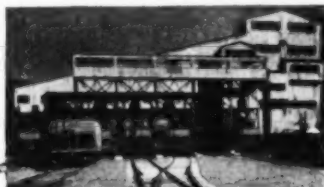
Bituminous is basic—the main-spring of America's might. Far-thinking executives—those who study existing facts, consider long-term possibilities, and prepare for emergencies—know this. So the vital decision so often made is, "build for bituminous."

Amid the uncertainties of the future is this fact: In the area served by the Baltimore & Ohio, lie vast, untapped reserves of excellent bituminous coals. They're in wide variety, and highly mechanized mines can produce them properly prepared for every requirement of modern industry.

Year after year, tireless research has made bituminous increasingly dynamic. Its further possibilities are tremendous. B&O, too, is constantly seeking better ways of serving the bituminous industry and its customers. More than \$80,000,000 has been spent in the last three years to improve B&O facilities for bituminous distribution. Here's real help for bituminous in guaranteeing the greatness of American industry for years to come. *Ask our man!*

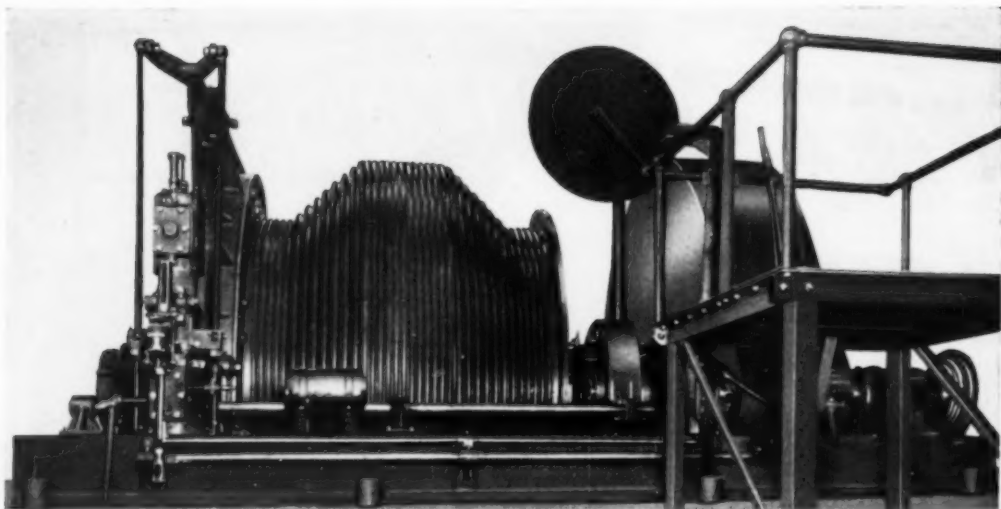
BITUMINOUS COALS FOR EVERY PURPOSE

—from modern
mines like
this—



BALTIMORE & OHIO RAILROAD

Constantly doing things—better!

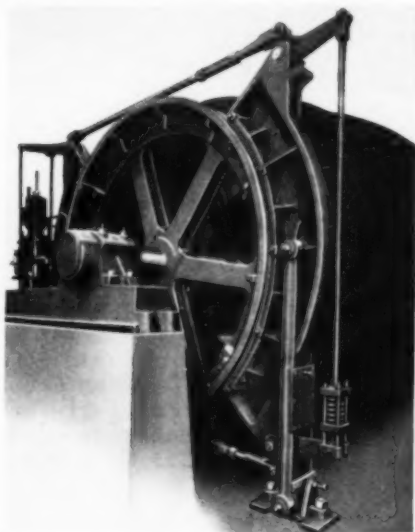


800 hp. Electric Hoist for balanced hoisting. Cast steel bi-cylindro-conical drum, built in four sections, is 9 to 12 ft. in diameter with machined grooves for 1 1/4" rope. Dependable safety devices stop the hoist quickly but smoothly in event of power failure, and prevent overwinding, over-speeding, or starting in wrong direction. Post brakes on drum and auxiliary brake on pinion shaft operated by gravity-actuated air-brake engine. Single-reduction herringbone gears are completely enclosed in oil-tight welded steel guard. Illustration shows shop assembly without motor or electrical control equipment.

For LOW-COST Hoisting in a West Virginia Coal Mine

In balanced hoisting at a well-known West Virginia coal mine the modern Vulcan Electric Hoist here illustrated and described combines high capacity with minimum power consumption. Its outstanding feature is the bi-cylindro-conical drum, cast in our own open-hearth steel foundry, which permits rapid acceleration without excessive peak load on the motor and assures minimum inertia of rotating parts during deceleration. Other features that make for fast, safe, hoisting at lowest ultimate expense are shown in the accompanying illustrations.

Your hoisting conditions may be entirely different but whatever they are Vulcan engineers can meet them with the right design—backed by experience acquired during a hundred years of continuous service to the mining industry. Correspondence regarding any present or prospective hoisting requirement is cordially invited. Illustrated bulletins on request.



Rear view showing air-operated parallel-motion post-type brake with pressure-graduating rig. The latter is an exclusive Vulcan feature which assures smoother, more uniform, graduated braking pressure than would otherwise be possible.



Vulcan Iron Works

WILKES-BARRE, PA., U.S.A.

Other Vulcan products include Allicasteel Sheaves, Cages and Skips, Shaking-Chute and Chain Conveyors and all types of Locomotives for underground and surface haulage. Write for illustrated bulletins.

● The United Electric Coal Cos., Chicago, last month reported that it was closing its Red Ray mine, Freeburg, Ill., and its Solar mine, Rushville, Ill. Lack of coal-cleaning facilities to meet present-day market demands was said to be the primary reason for the decision to close down the operations. The company has complete modern facilities at its other larger mines for the preparation of a quality product, it was pointed out. High cost of operation at the two mines also was understood to be a determining factor.

Schmidt Named Head of National Bituminous Group

At its meeting in Washington, March 9, the National Bituminous Coal Council named new officers and committee personnel for the coming year. Henry G. Schmidt, president, North American Coal Corp., Cleveland, was elected chairman; Ezra Van Horn, executive vice president, Ohio Coal Association, vice chairman; and Norman G. Schmidt was reappointed secretary-treasurer.

Membership changes also were announced. Andrew B. Crichton, president, Johnstown Coal & Coke Co., and B. R. Gebhart, vice president, Chicago, Wilmington & Franklin Coal Co., have accepted membership on the council. The acceptance of Ronald Oliver, of the Oliver Coal Co., appointed to the council, had not been received at the time of the meeting. Two members, George W. Reed and Charles Dorrance, had declined reappointment.

Committee-personnel appointments were announced as follows: Agenda—R. P. Koenig, chairman, I. N. Bayless, Irvin Davis, L. Ebersole Gaines, Arnold Levy and Ezra Van Horn; Appointment—George H. Love, chairman, H. B. Baird, J. R. Chandler, Heath S. Clark, R. H. Knode and Harry Moses; Finance—B. R. Gebhart, chairman, O. L. Alexander, James W. Morgan and Kenneth A. Spencer.

N. & W. Adds Steam Units; Southern Orders Diesels

Continuing its "home-building" steam-motive-power program through 1950, the Norfolk & Western R.R. has authorized construction of 13 additional modern freight and passenger locomotives at an estimated cost of \$3,650,000. Seven of the new locomotives will be Class Y6B, similar to the heavy freight engines now in use on the line; three will be Class A; and three will be the new Class J, which pull N. & W. through-passenger trains.

Plans of the Southern Ry. to purchase 95 diesel locomotives were recently reported. The new equipment is expected to cost an estimated \$15,800,000.



You're
throwing
your
business
in an
incinerator...

...If you trust

**ORDINARY METAL FILES
to protect any vital records
against FIRE!**

Records *have* been burned! ... Businesses *have* been ruined! ... Will yours be next?

Fire insurance cannot be collected without proof of loss records. More important, you could not keep your business operating without essential ledgers and papers. So, don't trust ordinary metal files that cremate records instantly in a fire.

4 out of 10 businesses that suffer a complete burn-out never reopen. Don't let that happen to you!



Safe, efficient Mosler Record Containers come in a variety of durable finishes to harmonize with your office.

HERE'S POSITIVE PROTECTION . . .

Mosler Insulated Record Containers. They provide constant, on-the-spot protection of a one-hour Underwriters' Laboratories, Inc., Class C, tested and approved safe—plus the convenience of a modern, efficient filing system. Insulated receding door locks over file drawers. Fire just can't get in... yet, you can have this invaluable protection at a surprisingly modest price.

Why take chances? See your Mosler dealer now and be sure. Send for booklet "Mosler Insulated Record Containers."

The Mosler Safe Co.

Main Office: 320 Fifth Avenue
New York 1, N. Y.

Dealers in principal cities
Factories: Hamilton, O.

Largest Builders of Safes and
Vaults in the World



Builders of the U. S. Gold Storage
Vault Doors at Fort Knox, Ky.

FILL OUT AND MAIL—TODAY!

The Mosler Safe Co., Dept. 54
320 Fifth Ave., New York 1, N. Y.

Please send me:

- ☐ The new free booklet "Mosler Insulated Record Containers."
☐ The Name of my nearest Mosler Dealer.

Name

Firm

Address

City Zone State

this

helps you
get the most
from your mines



Economical use of mechanical mining equipment and salability of the mined coal are two important factors in mine operating efficiency.

That's why major operators throughout the industry are including coal washeries in expansion plans . . . for with a well equipped washery you can use your mechanical equipment to remove all coal from the mine, *regardless of dirt*, and then wash the coal to get a cleaner, more salable product.



When you plan your washery, call in your Cambridge engineer for recommendations on dewatering and classifying screens of Cambri-Wedge, Flat or Riffle Surface, Wire.

Cambri-Wedge Screens are available in a wide choice of metals including stainless steel—in any length or width—and in mesh sizes from .005" up. Unique wedge-shaped wire assures positive drainage, greater freedom from clogging, maximum screen strength and life.

FREE FOLDER gives complete data on Cambri-Wedge Wire Screens. Write today. Also ask about regular woven stainless screen, square or oblong mesh or weave.



**Cambridge
Wire Cloth Co.**

Dept. M • Cambridge 4, Md.

Wire cloth
in rolls.



Any metal or alloy.
mesh or weave.

OFFICES IN PRINCIPAL INDUSTRIAL CITIES



New B. & O. Facility Speeds New York Coal Handling

NEW COAL-DUMPING installation recently placed in operation on Staten Island by the Baltimore & Ohio R.R. Co. is expected to provide expanded coal delivery for industrial and utility plants along the New York waterfront. Coal coming to New York by rail can be trans-loaded at the rate of 800 t.p.h. into barges or small harbor vessels for delivery directly to waterfront plants. Costing more than \$400,000, the new facility will handle between 1 and 1½ million tons of coal a year. As a part of the large railroad yard for storage of loaded and empty cars, there are four elevated tracks with a total capacity of 50 cars, from which the loaded cars move by gravity to hoppers for bottom-dumping.



Anthracite Owner Active 79 Years Without Accident

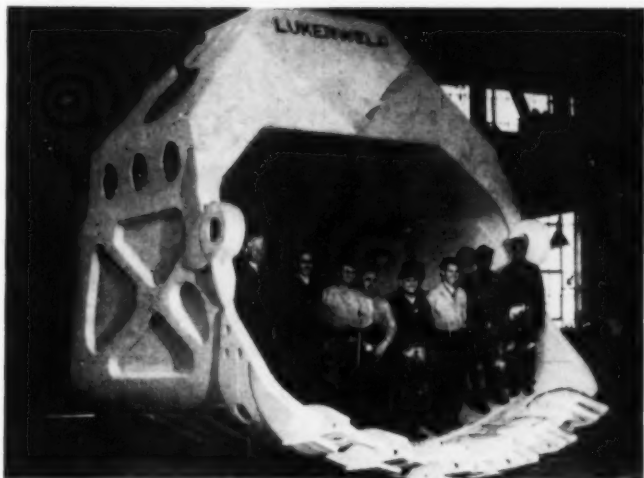
What may be a two-fold record for the coal industry—and for many other industries as well—will be established this year when John Conlon Sr., operator, John Conlon Coal Co., Hudson, Pa., completes 79 years of service in and around anthracite mines without a lost-time accident.

Mr. Conlon, who will be 88 next month, was born May 5, 1861, at South Scranton, Pa. In 1867, his family

moved to Wilkes-Barre, where he has resided since. Mr. Conlon began picking slate at the age of nine, and showing all the attributes of a miner, soon was given a job in the mine as door tender. His sister put the wick in his first oil lamp, packed his lunch and sent him to work. He was later given a job as mule tender which lasted until 1876. At the advanced age of 17, Mr. Conlon became mine foreman, remaining in that position until 1913, when he leased the Old Mill Creek mine. After obtaining the lease, Mr. Conlon was fireboss, outside foreman and mine foreman combined. The Madeira colliery was purchased in 1927 and operated as the John Conlon Coal Co. since that time.

Many changes have occurred in the mining industry during Mr. Conlon's career. The old water canal gave way to railroads, oil lamps were replaced by carbide lamps and then by electric cap lamps. Mine ventilation was improved from the old furnace system to the present day modern fans.

Mr. Conlon's 79 years of service without a lost-time accident is, of course, an outstanding record. Although merely 87 years old, Mr. Conlon arrives at the colliery before operations begin. He drives his own car and can read without glasses. His mind is very keen and memory excellent and he can tell some very interesting incidents relating to his long active life in the industry. He keeps fully occupied with conditions at the colliery and is a familiar figure around the neighborhood.



46-Yd. Hanna Dipper Sets New Capacity Mark

POWER-SHOVEL CAPACITY was pushed up another cubic yard last month with the shipment of this 46-cu. yd. dipper manufactured by Lukenweld, machinery-manufacturing division of the Lukens Steel Co., Coatesville, Pa. The bucket, setting a new capacity record, is being installed on one of the large Marion shovels in operation at the Georgetown No. 12 mine of the Hanna Coal Co., St. Clairsville, Ohio. Just last December, a 45-yd. Marion dipper installed on another of the Georgetown shovels had boosted the unit's capacity from

the previous mark of 40 cu. yd. (*Coal Age*, February, p. 144).

The new Lukens dipper is of welded steel-plate construction. The basic structure is made of manganese-molybdenum and austenitic steel plates, 1 to 3 in. thick, sheared, shaped and otherwise formed, assembled and welded. Fully 90 percent of the steel plates have an ultimate tensile strength of 110,000 psi., according to the manufacturer. With the 11x13x12-ft. bucket installed on the 54-ft. stick, the shovel reportedly can dig a path 80 ft. deep by 90 ft. wide without moving from its position.



Anthracite Institute Completes New Dust Laboratory

NEW LABORATORY recently opened in the Anthracite Institute's building in Wilkes-Barre, Pa., is fully equipped with latest modern equipment for mine-dust sampling as a service to all producing companies. The new facilities, supplementing the dust-control program being carried on by the individual producing companies, marks another forward step in the industry's program for better employee health and working conditions.

how
the
profile
speeds
production



with

Cambri-Wedge Wire Screens for Dewatering, Classifying

This cross section drawing shows how wedge-shaped members of Cambri-Wedge Wire Screens reduce clogging. Any dirt particles small enough to fit through the top opening between adjacent wires fall freely through the entire screen. Special Riffle Surface wire gives minimum moisture content in dewatered slurry—more complete dewatering.



FREE—learn all the advantages of Cambri-Wedge screens. See how they will save time, money, maintenance in your preparation plant. Mail coupon today. Also ask about regular woven stainless screens.



Cambridge Wire Cloth Co.

Dept. M • Cambridge 4, Md.

Wire cloth
in rolls

Also specialized
wire fabrications

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

Please send me—**FREE**—the folder
on Cambri-Wedge Screens.

Name

Company

Address

☐ Also send data on woven
stainless screens

North • East • South • West ... It's Schramm



... doing jobs like these in Your Field

At almost every turn you need compressed air!

The check list (at right) indicates some of the many compressed air jobs to be done, all of which are accomplished easily, quickly and economically with Schramm Air Compressors.

Here's *why* you profit, as others have, by using Schramm: they're compact, lightweight, easy to start; built for rugged jobs, to provide a continuous flow of air.

Important features include 100% water cooled; mechanical intake valve; forced feed lubrication and easy, electric push-button starting.

Performance everywhere has proved Schramm Air Compressors can do any compressed air job you require. Write today for list of models and sizes.

SCHRAMM INC.

THE COMPRESSOR PEOPLE • WEST CHESTER • PENNSYLVANIA

- Rock Drilling
- Breaking Pavement
- Trench Digging
- Clay Spading
- Sheet Pile Driving
- Backfill Tamping
- Caulking Pipe Lines
- Spray Painting
- Sand Blasting
- Digging Post Holes
- Pneumatic Grease Guns
- Pneumatic Tools
- Spraying Metal
- Spraying Enamel
- Riveting
- Steel Drilling
- Wood Boring
- Scaling
- Chipping
- Caulking Boilers
- Cleaning Boiler Flues
- Cleaning Engine Generators
- Operating Air Hoists

Many States Consider New Mine Legislation

Revision of state laws and the addition of new regulations were reported completed or under consideration last month in a number of state legislatures.

In West Virginia, the House, Feb. 25 passed and sent to the Senate the bitterly contested mine-safety bill (*Coal Age*, March, p. 140). The day previously, the House had rejected by a 45-43 vote a substitute for the U.M.W.A.-sponsored bill. Arch J. Alexander, chief, of the Department of Mines, had earlier told the House that he had prepared the substitute after he had found unsatisfactory provisions in the bill he had previously prepared jointly with the U.M.W.A. Action was delayed on a proposal by one delegate to create a study group to consider safety legislation, and thus give the Senate time to act on the bill.

Among the bills introduced before the deadline on new legislation was one sponsored by Del. Robinson calling for a tax of 1c. a ton for the privilege of mining coal in West Virginia. The revenue would be used for the support of humane institutions.

In Pennsylvania, it was reported March 16 that the administration was drafting a bill that would impose a state tax of 1c. a ton on all coal mined to finance a program to combat mine cave-ins and underground fires. The levy would provide about \$1,900,000 a year and it is understood that a state program of flushing abandoned mines with silt or culm would be provided for. When hardened, the material is expected to provide underground support and would also smother underground fires, the sponsors said. Operator opposition to the new tax may be tempered by the fact that its passage by the state would void all local coal taxes imposed recently by various local communities under authority granted by a 1947 law, it was reported.

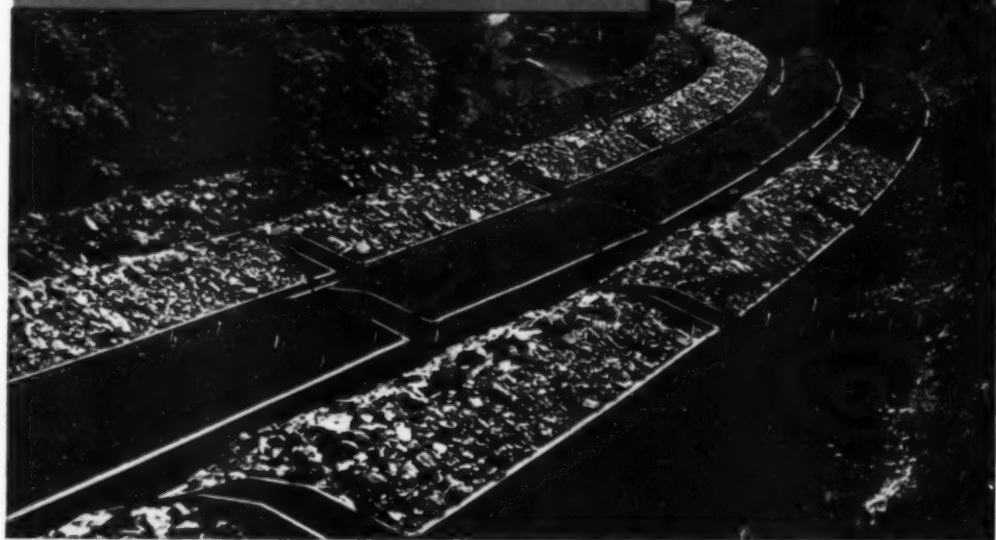
Among the several bills before the Pennsylvania Senate committee was one eliminating the numerical designation of anthracite mine inspection districts and permitting shifting inspectors as needed. The number of inspectors would not be changed. Other proposals would make it unlawful for persons to even attempt to carry into a mine matches, smoking materials or anything that would cause a fire. Mine inspectors would be required to search workers at least once a week for such materials. In addition, mine foreman would be required to examine gassy mines with an approved flame safety lamp at least three hours prior to the time men enter the shaft each day, instead of an inspection every morning as now required.

A bill introduced into the Pennsylvania Senate Feb. 28 would require operators taking coal from under private property or public roads or

"HOW WE LICKED A CRITICAL

Haulage

PROBLEM"



"PROPER LUBRICATION of our company-owned mine cars brought immediate results in our operations. The recommended Cities Service Trojan greases for journals and wheel bearings resulted in longer car life, lower power requirements to move cars and enabled our locomotives to handle longer trains.

"Cost of haulage dropped from more than 35% to less than 22% of our total mine operating costs. We used Trojan greases recommended by the Cities Service lubrication engineer."

A COMPLETE LINE OF TOP QUALITY LUBRICANTS
FOR EVERY COAL MINING NEED

- Air compressor oils • Diesel engine oils • Gear oils
- Hydraulic oils • Pneumatic tool oils • Steam cylinder oils
- Cable dressings • Coal mining machinery greases.

Free — A new fact-filled booklet: COAL MINING MACHINERY LUBRICATION is available upon request. Write Cities Service Oil Company, Room 354, Sixty Wall Tower, New York 5, N. Y.



CITIES  SERVICE

CONTROL COAL DUST with Pangborn Dust Control



PANGBORN Dust Control Equipment gives you:

- efficient coal dust disposal and reclamation
- increased safety
- improved working conditions
- lower equipment maintenance cost
- decreased dust nuisance

In scores of coal preparation plants, Pangborn Dust Control installations have paid off over and over again by improving working conditions, eliminating dust nuisances, cutting maintenance costs, doing a superior job of dust disposal and reclamation. By effectively collecting the fine coal dust produced in the operation of tipplers, dry cleaning, de-dusting and other preparation facilities, Pangborn has become a by-word for making profit-stealing coal dust behave.

Whatever your dust problem—high machinery maintenance, nuisance, lost profits through faulty reclamation—Pangborn engineers can help you with an economical and effective solution. Let us make a *dust pocket survey* for you. No obligation—but with the information it gives us, we can recommend the right Pangborn Dust Control Equipment to rid your plant of dust hazards and nuisances.

Write for Bulletin 909A, "The Control of Industrial Dust." PANGBORN CORPORATION, 288 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for all the latest developments in Dust Control and Blast Cleaning Equipment.



STOP THE DUST HOG

from stealing profits with

Pangborn

DUST CONTROL

streets to provide adequate support to prevent cave-ins, with a penalty of \$1,000 fine, 90 days in jail, or both. On March 6 the House Democratic floor leader reported that a party caucus had called for a state policy of granting compensation to both individuals and communities for losses suffered in anthracite cave-ins.

The Colorado Senate mine committee was scheduled to begin March 2 its second hearing on the proposed revision of the state mining code (*Coal Age*, March, p. 150). Considerable opposition to the bill in its present form had been displayed in various quarters.

Legislation setting up safety practices for Arkansas coal mines was passed by both houses early in March and went to the governor for action. The bill also provided for the certification of miners and raised the minimum age for miners from 14 to 18.

In Indiana, the House Feb. 28 killed a bill that would have required strip operators to restore mined land to approximately its original contour level. On Feb. 27, Gov. Schriker signed a bill requiring state inspection of all mines employing five or more men. A bill voiding any Indiana city ordinance prohibiting use of coal mined in Indiana as a step toward better smoke control was signed by the governor.

Montana, too, had a mine-safety bill under consideration. Action on the 40-page bill on a state code was expected in the Senate early in March.

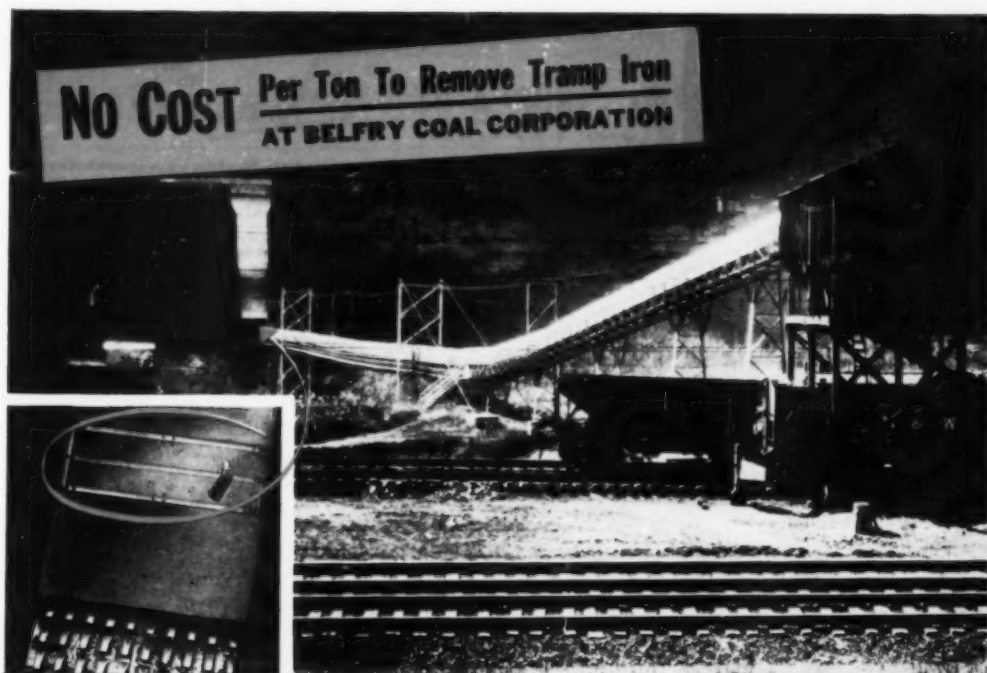
The Maryland state law regulating coal and clay strip mining was declared constitutional in an opinion issued Feb. 28 by the Allegany County circuit court. The case, which was heard last September, originated in a suit brought by the Maryland Coal & Realty Co. and the Tri-State Construction Co. The court ruled that the state mines director had not been given unreasonable power.

B.C.R. Plans Development Of Steel Conveyor Belt

A \$100,000 project for the development by Bituminous Coal Research, Inc., of a stainless-steel belt conveyor is under consideration by five steel and mining equipment manufacturers. Representatives of the U. S. Steel Co., Allegheny Ludlum Steel Co., Jeffrey Mfg. Co., Joy Mfg. Co. and Goodman Mfg. Co. were reported to have recently met in Huntington, W. Va., with Gerald Van Stroh, director of B.C.R.'s Mining Development Committee, to discuss the project. The program reportedly is being referred to the American Iron & Steel Institute for final approval. If perfected, the new-type steel belt would cost about \$2 a foot, in comparison with rubber belts costing around \$6 a foot, it was said.

It was understood that the \$100,000 expenditure would be in addition to the \$250,000 already available to the Mining Development Committee for research on a continuous mining machine.

No COST Per Ton To Remove Tramp Iron AT BELFRY COAL CORPORATION



Eriez permanent magnets eliminate operating and maintenance expense - - -

BELFRY Coal Corporation takes tramp iron out of their coal for nothing by installing Eriez Permanent Non-Electric Giant Plate Magnets in the bottom of the feed chutes. Thus they get clean, iron-free coal and also protect preparation equipment from damage by tramp iron.

How do they do it for nothing? First, the low installation cost of Eriez Permanent Non-Electric Magnets is soon repaid in the savings they make in operating and maintenance expense. No electric current, no wiring, no conversion from AC to DC . . . In short, no operating nor maintenance

cost whatever . . . No shutdowns due to current failure, no burn outs. Eriez Magnets are Permanent. They are on the job 24 hours daily . . . they come to you completely energized, ready for their life-long, full-strength duties. Why not call in an Eriez Permanent Magnetic Separation Engineer today? Let him recommend the correct answer to your tramp iron troubles. *And send the coupon below now for your copy of Catalog No. 12, giving full details on the complete line of Eriez Permanent Non-Electric Magnets.*

See our exhibit
American Mining Congress
Cleveland, Ohio
Booth No. A234, A232, A230



Pioneer of
PERMANENT
Magnetic Separation

CLIP AND MAIL TODAY
Please send catalog No. 12

CA-4

We would like to know more about installation of ERIEZ on:

- ☐ Gravity Conveyors ☐ Mechanical Conveyors
☐ Equipment on processing Machines

Company _____

Your Name _____ Title _____

Address _____ City _____ State _____

When It's Magnetic Protection . . . See Eriez First

ERIEZ MANUFACTURING COMPANY

60 East 12th St. • ERIE, PA.

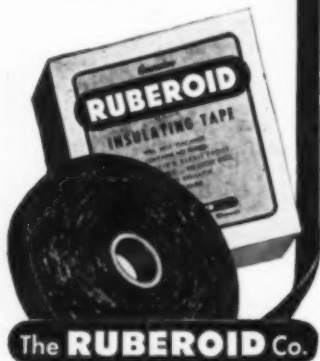
**HOLDS
ITS
GRIP!**

RUBEROID INSULATING TAPE

• Tough and waterproof, Ruberoid Insulating Tape holds its grip no matter how it's abused. For over 60 years it's been first choice for wrapping mining machine cables. Here are the reasons:—only Ruberoid Insulating Tape has all these seven important features!

1. Double grip—both sides adhesive
2. Great tensile strength
3. Won't tear, ravel or pucker
4. Resists abrasion
5. Acid and alkali proof
6. Extra thick—one layer insulates
7. Exceeds A.S.T.M. specifications...

—by 300% in adhesiveness
—26% in tensile strength
—290% in dielectric strength!



The RUBEROID Co.

QUALITY BUILDING MATERIALS
500 Fifth Ave., New York 18, N. Y.

Coal and Business Activity

	1949 to This Date	1949 Over 1949, to Date
Est. anthracite prod., week ending March 12....	700,000	—33.8%
Est. bituminous prod., week ending March 12....	10,350,000	—17.5%

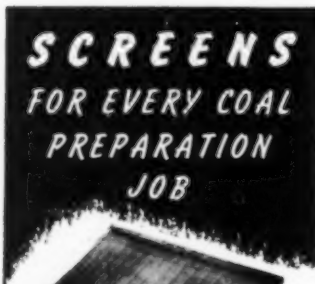
Source: U. S. Bureau of Mines.

	Bituminous Coal Stocks				Consumption		
	(Thousands, net tons)				(Thousands, net tons)		
	Feb. 1, 1949	Day's Supply	Jan. 1, 1949	Feb. 1, 1948	Jan., 1949	Dec., 1948	Jan., 1948
Electric power utilities.....	24,150	91	24,812	15,792	8,251	8,508	8,796
Byproduct coke ovens.....	12,481	45	12,104	8,671	8,634	8,635	8,400
Beehive coke ovens.....	1	1	1	1	973	999	955
Steel and rolling mills.....	1,027	38	1,052	953	878	859	1,104
Cement mills.....	1,194	30	1,291	1,049	731	777	709
Other industrial.....	17,169	31	17,997	14,824	10,401	10,505	9,316
Railroads (Class I).....	9,531	39	9,411	6,906	7,498	7,710	9,726
Retail dealers.....	2,243	7	2,706	1,391	9,477	8,999	13,247
Total.....	67,805	45	69,373	49,586	46,865	46,913	52,260

Source U. S. Bureau of Mines. *Not available. †Retail dealer deliveries.

	Latest Week*	Month Ago	Year Ago
Business Week Index of Business Activity, wk. ending Mar. 12	106.3	200.0	198.5
Steel ingot operations (% of capacity).....	102.0	100.0	97.5
Electric power output (million kw.-hr.).....	5,531	5,722	5,285
Crude oil production (daily av., 1,000 bbl.).....	5,123	5,330	5,265
Misc. and L.C.L. carloadings (daily av., 1,000 cars).....	74	70	81
All other carloadings (daily av., 1,000 cars).....	43	43	51
Prices, spot commodity index (Moody's, Dec. 31, 1931 = 100).....	371.8	374.1	406.8
Prices, industrial raw materials (B.L.S., Aug. 1939 = 100).....	262.8	271.0	267.7
Prices, domestic farm products (B.L.S., Aug. 1939 = 100).....	296.0	285.7	370.7
Prices, finished steel composite (Steel, tons).....	397.77	397.77	381.14
50 stocks, price index (Standard & Poor's Corp.).....	119.0	116.1	111.1

*Date of latest week for each series on request.



- STAINLESS STEEL
- ALL WELDED CONSTRUCTION
- NON-BLINDING



BUILT TO
YOUR
SPECIFICATIONS

BIXBY • ZIMMER
ENGINEERING CO.
961 Abingdon St. • GALESBURG, ILL.

Bureau to Dedicate Two Synthetic-Fuel Plants

Plans for the dedication on the anniversary of VE-Day, May 8, of two new coal-to-oil demonstration plants being built at Louisiana, Mo., by the U. S. Bureau of Mines were announced last month by Secretary of the Interior Krug.

Said to be the first of the kind in the country, the new plants, about 100 miles above St. Louis on the Mississippi River, will employ different processes to convert coal and lignite into high-quality synthetic-liquid fuels. They are being erected at a cost of \$15,000,000.

The first of the new units, the hydrogenation-demonstration plant, is now ready for operation, with a capacity of 200 to 300 bbl. a day. Initially, the plant will process western coals. After the operating difficulties have been ironed out, typical coals from other sections of the country will be tested. The gas-synthesis-demonstration plant, the second unit, which will have a capacity of 80 to 100 bbl. per day, is scheduled for completion this year.

As a part of the ceremonies, there will be a public "open-house" inspection on Friday, May 6. A special train will carry industrial executives and other invited guests from St. Louis to Louisiana, Mo., early Sunday morning, May 8.

CREATING *nothing* TO ASSURE
LONG LASTING SERVICE



**QUAKER HOSE IS VACUUM "PRE-TESTED" FOR STRENGTH
OF WALLS... DURABILITY IN COAL INDUSTRY SERVICE**

If it has the Quaker trade-mark, it must be right... each type of hose must meet rigid "pre-tests" before it is shipped for service in the coal industry. Scientific pre-tests that subject hose to torture-tests more severe than will ever be encountered above or below ground, are conducted right in Quaker plants.

One of these steps in "pre-testing" Quaker Hose is shown above. A vacuum test that puts Quaker Hose through the paces to provide rubber products for the coal industry that are second to none in quality.

This is only one of the eighteen rigid tests that raw materials and finished products must pass before receiving the Quaker stamp of approval. Yes, "pre-testing" of Quaker belting, hose and packings provides quality and long service... assures worthwhile dividends for your operations through less time-outs for maintenance, higher efficiency, lower cost per ton of coal mined.

PACKINGS THAT PRESERVE POWER



Quaker Packings are pre-tested for size, shape and quality to assure perfect fit, long service, maximum power.

BELTS THAT BOOST POWER

Quaker's complete line of conveyor and transmission belting for every coal mine requirement, is pre-tested and service-proved to provide sure-grip... slip less... save power.



QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1
Western Territory

QUAKER PACIFIC RUBBER CO. • San Francisco 10 • Los Angeles 21 • Seattle 4

**Q
U
A
K
E
R**

**RUBBER
PRODUCTS**



REG. U. S. PAT. OFF.

NEW CATALOG-DATA BOOK OF INDUSTRIAL FITTINGS!



Contains . . . NEW FITTINGS . . . NEW
DATA . . . EXCLUSIVE FITTINGS . . . NEW,
HELPFUL TABLES FOR ENGINEERS . . .
DESIGNERS . . . RIGGERS . . . BUYERS

Now . . . Select The *Right* Fittings
For Your Job *Easily* . . . From The
Most Complete Line Of Wire Rope
and Chain Fittings. Stocked By Leading Distributors.

FREE! Solve any industrial fitting problem with
Laughlin's new data book. Fill in coupon
and mail . . . no cost . . . no obligation.

Name Position

Company

Street

City Zone State

THE THOMAS LAUGHLIN COMPANY, DEPT. 6, PORTLAND 6, MAINE

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



Gasification Begun at Second Gorgas Project

The second experiment in underground gasification of coal at the Gorgas, Ala., property of the Alabama Power Co. (*Coal Age*, March, p. 119) got under way March 18 with the firing of the underground area by a thermite bomb.

Primary objective of the project, sponsored jointly by the Alabama Power Co. and the U. S. Bureau of Mines, is to obtain a gas of constant heating value with a consistent balance of hydrogen and carbon monoxide for use either as a fuel or in the production of synthetic liquid fuels. A large block of coal under cover averaging 120 ft. has been set aside for the test.

Spoil Banks Planted in Indiana and Kentucky

Organized large-scale seeding and reforestation of stripped-over land in Indiana and Kentucky were reported early last month.

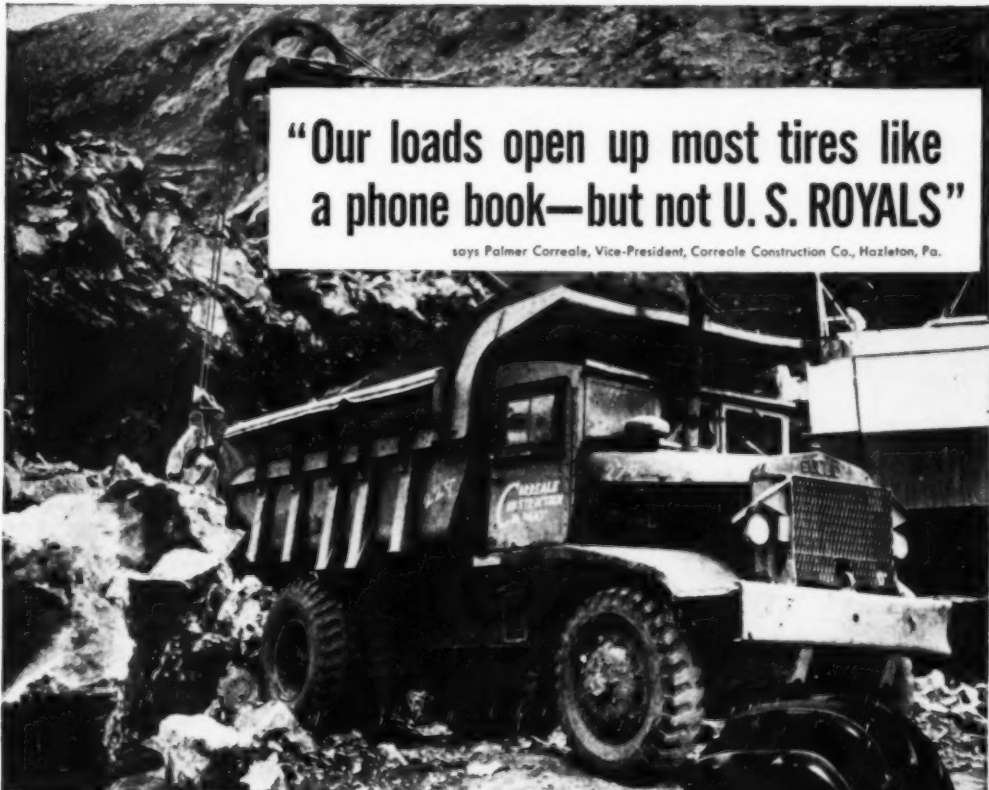
In Indiana, the Indiana Coal Producers' Association, with L. E. Sawyer, director of forestry and reclamation, in charge, planned the planting of tree seedlings on 2,211 acres of land in 10 counties. Approximately 1,531,000 trees were to be planted, bringing to nearly 25 million the number planted by association members in the past 25 years. Other areas were to be seeded in pasture.

Using a rented helicopter, the Kentucky Reclamation Association completed the seeding of 507 acres with various grasses in Hopkins, Muhlenburg, Ohio and Webster Counties. More than 500,000 tree seedlings also were to be planted in the four counties, according to James H. Moore, director of the association.

Coal and Rail Group Hits At Oak Ridge Gas Use

A campaign against plans of the Atomic Energy Commission to feed 60,000,000 cu. ft. of natural gas daily into the steam plants of the Oak Ridge, Tenn., atomic energy plant was begun last month by a group of coal mining and shipping interests known as the Fuels Research Council, Inc. Plans call for the eventual use of 80,000,000 cu. ft. daily, it was charged.

In a booklet urging public reaction against the proposal, the Council said that reserves of coal in the area were sufficient for 4,000 years of production at the current rates, while the natural gas to be required "is enough each day to provide fuel for cooking, heating water and space heating in 146,000 average homes." Oak Ridge is within 35 miles of 20 different coal mines, all connected by rail transport, as well as numerous truck mines, the Council maintained.



**"Our loads open up most tires like
a phone book—but not U. S. ROYALS"**

says Palmer Correale, Vice-President, Correale Construction Co., Hazleton, Pa.



**"OUR TIRES OFTEN CARRY 35-TON LOADS...
IN ALL WEATHER...21 HOURS A DAY!"**

... Our Beechwood stripping operation is so deep that our trucks must haul coal and rock up grades of more than 10%. We cannot afford slipping, sliding or tire failure on the job. That's why we've tested and selected U. S. Royal Contrak-tors."

U. S. ROYAL CON-TRAK-TOR. Just look at all the extras built right into this rugged tire:

- **CUT-RESISTING TREAD** with deep cleats gives your trucks 2-way traction.
- **ROUNDED SHOULDERS** improve flotation in soft going.
- **SHOCK PAD CONSTRUCTION** guards against rupture.

U. S. FLEET SERVICE. Your U. S. Royal Distributor is ready to draw up a tailor-made preventive tire maintenance plan designed especially for your operation—a plan which can give you lower cost per tire mile! He'll give you service where it counts—on your job! Call your U. S. Royal Distributor today. He's listed in your Classified Telephone Directory.



The finest tires you can buy are
U. S. ROYALS by U. S. RUBBER





TIPPLE EQUIPMENT



SHEAVES



CAGES



SKIPS



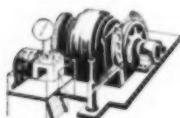
LOWERING SPIRALS



CAR PULLER AND RETARDERS



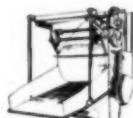
LABORATORY CRUSHERS



HOISTS



VIBRATING SCREENS



DUSTULATORS

**ENGINEERS, MACHINISTS
STEEL FABRICATORS
PATTERN MAKERS
GREY IRON FOUNDERS**



ROBERT HOLMES & BROS., INC.
DANVILLE, ILLINOIS



They all point to **HOLMES BICYCLE TYPE SHEAVE**

Sturdily designed for heavy duty hoisting, yet weight is held to a minimum. Carefully balanced and accurately machined for correct alignment and smooth operation. Modern manufacturing standards plus highest quality material obtainable are used exclusively.

YOU CAN GET AN IMPORTANT EXTRA

Renewable steel liners multiply sheave life. You do not disassemble sheave, shaft or bearings in any way to replace liners, which come in segments, easy to handle and simple to mount.

A complete line of Sheaves are available in sizes to 12 feet, also a choice of plain, collar, oiling, ring, oiling, or anti-friction bearings. Why not decide on Holmes Sheave and Bearings and benefit from our more than 50 years experience and leadership in the manufacture of Head Sheaves and Bearings. We'd like to receive your inquiry—prices and specifications will be furnished without obligation on your part.

First Aid Training for Third Consol (Ky.) Mine

With the completion of the U. S. Bureau of Mines' 15-hour course in first-aid training by the employees of the Hill mine, Consolidation Coal Co. (Ky.), Virgie, Ky., three of the company's mines now have 100 percent of their employees trained in first aid in the past few months, it was recently announced.

Training classes were conducted by Consol's first aid instructor, Blaine Sexton, under the supervision of instructors from the Bureau. Valuable assistance in support of the program was rendered by local union officials, it was reported.

1948 Gain Best in Decade For Oil and Gas Liquids

The American Petroleum Institute last month reported that proved reserves of crude oil and natural-gas liquids were increased by 2,079,567,000 bbl. in 1948, the largest one-year gain in more than 10 years.

At the end of the year, the reserves totaled 26,821,227,000 bbl., compared with 24,741,660,000 bbl. at the end of 1947. Production during 1948 was 2,186,197,000 bbl., indicating that 4,265,764,000 bbl. of new oil was brought into sight in 1948. This gain in the proved reserves of liquid hydrocarbons included 3,804,600,000 bbl. from revisions of previous estimates and extensions of old pools and 461,164,000 bbl. from new discoveries.



Employees Refuse Gift Of Colorado Mine

Four employees, veterans of more than 20 years at a city-owned coal mine, Colorado Springs, Colo., were reported March 1 to have turned down the gift of the property valued at \$60,000. George Krause, president, Colorado Springs Co., indicated that the mine was to be closed and that the workers had been given a chance to operate it rather than losing their jobs.

In rejecting the gift, the spokesman for the four wrote Mr. Krause: "Your offer . . . has been given careful thought. The problem of enough assets to cover the liabilities was a hard one. We invited outside capital to help us out but with no results.

"The problem of being able to hire efficient help is serious," he continued. "Habits are like fingerprints; they are carried from the cradle to the grave. The present paternalistic government has made discipline almost non-existent.

"I am sure we do not have the proper business aptitude to make a congenial, successful company. We appreciate your offer and have tried our best to find a solution."



DUST
PROOFING



DUST-PROOFING AND FREEZE-PROOFING WITH

PERMATREAT COAL SPRAY

Protect **INDUSTRIAL**

COAL HANDLING EQUIPMENT



FREEZE
PROOFING



PERMANENT
ODORLESS TREATMENT



BETTER
STOKER FEED



CLEAN
HANDLING



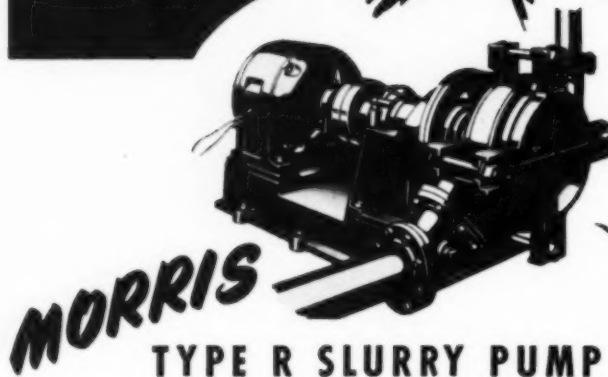
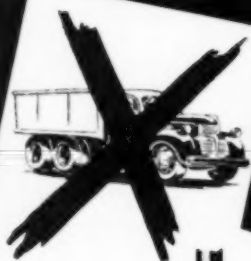
LESS
WINDAGE LOSS

Permatreat protects coal handling equipment just as motor oil protects cylinders in an automobile engine. Permatreat eliminates corrosive action which causes breakdowns in stokers and other handling equipment. It eliminates the problem of unloading frozen hopper cars; handling and storage are easier. Permatreat also eliminates the dust nuisance by sealing fly-dust to coal.

An Ashland representative will gladly answer coal spray treating questions of industrial users of coal and coal mine operators. For the complete story of coal spray treating of industrial coals, just drop us a line and ask a representative to call; no obligation.

ASHLAND OIL & REFINING COMPANY
Ashland, Kentucky

**EASIER
DISPOSAL
of silt,
coal refuse!**



**Saves you the high cost
of trucking refuse away!**

In coal washeries and processing plants, Morris Pumps have been saving coal operators thousands of dollars in waste disposal operations. They eliminate expensive truck maintenance . . . trucking labor . . . and in many cases, they eliminate the building of roads for trucks to travel.

**Morris pumping installation is
simple in design . . . low in cost**

Morris furnishes pumps of various types depending upon the operating conditions . . . type of refuse to be handled . . . static discharge head . . . length of pipe line through which refuse is discharged.

Morris also recommends the size of piping best suited for the job. Pipe laying expense can be kept at a minimum by using light weight abrasion resisting pipe, easily and quickly coupled . . . easily moved . . . suitable for uneven terrain.

REDUCE YOUR OPERATING COSTS—NOW!

Morris Pumps are ideally suited to the removal of fine silt and other types of refuse. They're easy to install . . . easy to maintain . . . easy to dismantle.

Write today for full information. Read how Morris' wide experience of 83 years in building and installing pumps and dredges can save you money and refuse disposal headaches. We'll also send you names of mines now using Morris installations.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS Centrifugal Pumps

**Indictments Voided
In Centralia Case**

Indictments against Robert M. Medill and Robert Weir, former director and assistant director, Illinois State Department of Mines and Minerals, were quashed March 1 by Judge Charles Randolph in the Wayne County circuit court.

The judge ruled that the sections of the state mine law under which the indictments had been drawn did not apply to the director or assistant director as alleged. The indictments had charged the officials with omission of duty for alleged failure to enforce the state mine safety code before the Centralia mine explosion. The case was originally started in Washington County but was moved to the Wayne County court on a change of venue.

**Missouri Valley Authority
Sought in Senate Bill**

A measure to create a Missouri Valley Authority to supervise the development of the "great economic resources and tremendous potential wealth" of the Missouri basin was introduced into the Senate early last month by Sen. Murray (D., Mont.) and 13 other senators.

Control of rivers to head off dangerous floods was one of the primary reasons cited for the new authority outlined in the bill. Further entrance by the government into the electric power business was indicated, however, if past experience with the TVA could be considered a criterion, some reports stated. According to the proposed bill, the new authority will be patterned after the TVA and the Bonneville Power Administration.

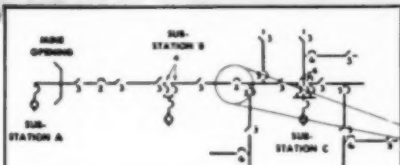
**Colorado Coal Group
Seeks Synthetic-Fuels Plant**

Plans for promoting government construction of a \$75,000,000 coal-hydrogenation plant at Pueblo, Colo., were discussed March 4 at a meeting of the newly formed Rocky Mountain Empire Synthetic Fuels Association. The group which is composed of coal operators and civic officials in the area, will seek construction of a government plant for the development of coal reserves in Fremont, Huerfano and Las Animas Counties. The association may be enlarged to include representatives from all of Colorado, New Mexico and Utah if advisable. A. J. Merritt, Walsenburg Coal Co., is president of the association, and Jack Lacy, manager of the Pueblo Chamber of Commerce, is secretary.

Earlier, residents of Delta, Gunnison and Montrose Counties were reported to have formed the Tri-County Development Association to try to secure construction by the government of a synthetic-liquid-fuels pilot plant at Austin, Colo. Charles Fair-

To BOOST PRODUCTION—INCREASE SAFETY— apply these recommended sectionalizing practices

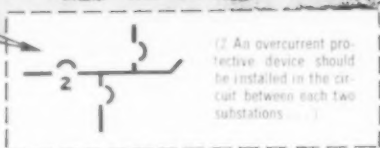
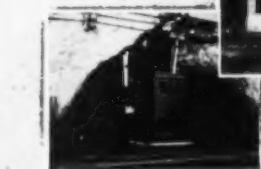
When electrical distribution systems are properly sectionalized with I-T-E Sectionalizing Switchgear, production levels are raised: time lost because of electrical disturbances is kept to a minimum; safety to personnel and equipment is assured. Study these recommendations—see how they would apply to your distribution system—find out how your mine can benefit from proper applications of I-T-E Sectionalizing Switchgear!



THE RECOMMENDED D-C SECTIONALIZING PRACTICES:

Key

- 1 In each of the following cases, sufficient feeder and return circuit capacity should be provided so that the overcurrent protective device will be opened by a dead short-circuit at the most remote point of the circuit.
- 2 An overcurrent protective device should be installed between each two substations at such a point in the circuit that the resistance between each station and the device is approximately the same.
- 3 A disconnect switch or protective device should be placed at not more than 1,500 ft. intervals in every power line.
- 4 An overcurrent protective device should be used in each circuit leaving a substation. If automatic reclosing circuit breakers are employed for this, trip-free operating mechanism should be used.
- 5 An overcurrent protective device should be placed at each main-branch circuit.
- 6 Each mining setup should be protected by an overcurrent protective device. In some cases, it may be necessary to protect two setups by one device.



(2 An overcurrent protective device should be installed in the circuit between each two substations . . .)

The most important application, from a fire prevention standpoint, is preventing distant sub-stations from feeding into a short anywhere in the lines between the substations. By installing an I-T-E Type KSC Automatic Reclosing Circuit Breaker for this duty, substations are quickly—effectively—separated in event of a fault.

The KSC operates on circuits which can be fed in either direction; protects feeders and equipment by detecting disturbances on either side; opens quickly at first sign of short or overload—recloses automatically on a return to normal line conditions. For complete information on the I-T-E Type KSC—the only circuit breaker developed specifically for the mining industry—write for Bulletin 4611.

To find out how you can benefit from a proper application of I-T-E Sectionalizing Switchgear in your mine, consult the I-T-E Mining Specialist in your locality. He understands thoroughly the Bureau of Mines' new recommendations of Standard Safety Rules for installing and using electrical equipment in coal mines. He is also fully qualified to assist you in laying out the sectionalization of your distribution system. Use his services without obligation.

Be Production-Wise . . .
Sectionalize!



S-E-C-T-I-O-N-A-L-I-Z-I-N-G
SWITCHGEAR

The Leader In Technical Excellence

I-T-E CIRCUIT BREAKER CO., 10TH & HAMILTON STREETS, PHILADELPHIA 30, PA.
31 OFFICES IN THE UNITED STATES • In Canada, EASTERN POWER DEVICES, LTD., TORONTO
SWITCHGEAR • UNIT SUBSTATIONS • AUTOMATIC ENCLOSING CIRCUIT BREAKERS

Safer Mine Roof Control with **SIMPLEX JACKS**



SIMPLEX MINE ROOF JACKS Three Types of Heads



SIMPLEX PIN-UP JACKS

Type "FL" Head flat with lugs.

also

Mine Timber Jacks, Electric Track Jacks, Mine Post Pulling Jacks, Anchor Jacks and Simplex Hydraulic Jacks.

Page one news for mine operators—every day in the year—is improved mine safety... the story that doesn't hit the headlines. Mine safety starts with Simplex Mine Roof Jacks for safer, more efficient roof control. Here is jacking safety that gives improved operating dependability; longer service and lower jacking costs. Simplex jack engineering offers you a complete line of better, safer jacks for every mine job:

SIMPLEX MINE ROOF JACKS

Easily set in place to reduce hazards of soft tops. Allow loading machines, conveyors to work safely in less space. Square or tubular; 8 or 16 ton capacities; slide or lever nut handles.

SIMPLEX PIN-UP JACKS

For temporary support. Permit full cut to be loaded. Eliminate danger of knocking out posts. 8 and 16 ton capacities.

SIMPLEX GENERAL DUTY MINE JACKS



Double lever sockets, 5-ton capacities, for coal cutting and loading machines, raveling cars, shop, track work.

Simplex

LEVER • SCREW • HYDRAULIC

Jacks

For complete information on all Simplex Mine Jacks send for Bulletin Mines 47 and Mines 48.

TEMPLETON, KENLY & COMPANY

1040 South Central Avenue, Chicago 44, Illinois

lamb, head of the Delta Chamber of Commerce, was named head of the new organization.

Foreign Developments



CANADA—Some 9,000 miners in Alberta and British Columbia were reportedly working in March under new 1949 contracts which, while increasing the employers' contribution to the welfare fund from 5 to 15c. a ton, provided for no increases in wages. One contract covering 3,500 men and signed with the Domestic Coal Operators' Association of Western Canada also included holidays with pay and covered the "flat rate" portion of the contract miners' pay. The second contract, signed with the Western Canada Bituminous Coal Operators' Association and affecting 5,500 men, was similar except that the flat rate provision was not written in. The operators agreed to continue the rate, however. The contracts were made by District 18, U.M.W.A.

It was expected that a similar contract would be agreed on for the 1,300 miners employed at the Vancouver Island operations of the Canadian Collieries (Dunsmuir) Ltd., whose contract was scheduled to expire April 1.

In Nova Scotia, it was reported that the Dominion Steel & Coal Corp. and District 26, U.M.W.A., had agreed on a 1949 contract that called for increase of 50c. above the current daily basic wage rate of \$7.64.

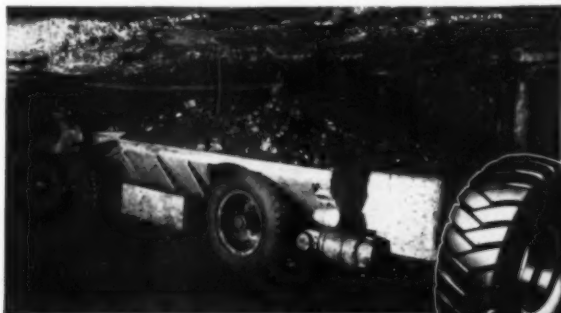
Stiffening competition for United States anthracite coal imported into Canada may be expected if current negotiations for the import of Welsh anthracite work out, it was reported last month. Both industry and government officials in Great Britain were understood to be urging greater shipments of Welsh coal to make possible greater imports of food and raw materials from Canada. A representative of the National Coal Board arrived in Canada during the month to examine export possibilities. It was reported, however, that some compromise in the price of Welsh coal would have to be made, as its present price would be about \$2 a ton higher than that at which America coal could be supplied.

AUSTRALIA—Plans to produce oil from large deposits of coal at Callide, in Central Queensland, on the condition that the federal government exempts the project from taxation for

**OVER SHARP ROCKS, DEEP RUTS, MUD,
SLUSH AND GRAVEL, *Generals* MOVE
HEAVY LOADS OUT AND OVER THE HIGHWAY
*Faster, Cheaper, Safer***



Here's the answer to your tire problems. Two great General tires built to take bruising punishment on jagged strip mine roads. The *General L. C. M.* for trucks that work 80% in the stripping area—20% on the highway. The *General H. C. T.* for some work off the road—most work over the highway. A dual-purpose team to answer important hauling problems in your mining operation. More mileage, longer wearing, double-duty tires that mean big savings in time, labor and money to you.



★ General's new underground mining tire with extra wide, extra deep tread. Tremendously thick sidewalls for extra protection; many extra hours of wear under punishing conditions. Easier steering, more traction.

★ *L.C.M.*—Extremely thick, tough tread cushions tire surface against snags and cuts. Tremendous self-cleaning shoulders throw off mud and rocks, while deep cleats develop powerful traction.

★ *H.C.T.*—Double-thick, tough tread. Greater blowout protection. Extra deep tread grooves develop extra traction through mud, slush and gravel . . . prevent slipping and spinning.



THE GENERAL TIRE &
RUBBER CO., AKRON, OHIO

Now... IT'S EASY TO SELECT THE RIGHT DUFF-NORTON JACK

... for
every
mine
application
with this

*New
Handy Guide*

ON DUFF-NORTON

MINE JACKS

Here's the New "Handy Guide" you've needed . . . to help you select the *right* Duff-Norton Jacks for supporting roofs, maintaining mine cars and track, lifting and lowering heavy coal cutting and loading machines, supporting conveyors, etc. If you use, specify or buy jacks, you should have a copy of this "Handy Guide."



Write for your free copy today!

THE DUFF-NORTON MANUFACTURING CO.

MAIN PLANT and GENERAL OFFICES, PITTSBURGH 30, PA. — CANADIAN PLANT, TORONTO, ONT.

"The House that Jacks Built"

seven years, recently were reported. According to the holder of the major leases in the area, L. G. Neill, American methods would be utilized. He reportedly estimated that 100 gal. of oil could be extracted from a ton of coal.

Reportedly exasperated by the slow progress of mechanization in many collieries, the Australian Joint Coal Board has announced a hire and hire-purchase plan to enable financially-weak mine operations to put mechanical equipment to use without delay. The Coal Board recently imported several million dollars worth of machinery from the United States and Britain and more is on order.

The mines must hire the equipment for a period of not less than five years, with the option of an extension of the contract. They are held responsible for maintenance and at the end of the period must return the equipment in good order, with allowance for wear and tear. They will not be held responsible for total loss of equipment through accident. The hire rate is payable in four-weekly intervals. The equipment, which includes loaders, cutting machines, shuttle cars, etc., may be purchased outright at any time at a price to be negotiated.

Among its plans to induce mine workers to stay in the industry, the Coal Board has announced that it will subsidize the attendance of miners' children at summer vacation camps. Total cost of a fortnight's stay at the seaside for each child is \$4.00, the balance to be paid by the Board. In addition to scholarships in coal mining engineering, the Board also is offering a free university education in non-technical subjects to talented sons and daughters of miners.

HOLLAND—Dutch coal production increased in 1948, totaling 11,037,000 metric tons, as compared with 10,104,000 tons in 1947.

POLAND — February production figures released last month indicate a serious decline in Poland's coal production, of vital interest to the country's post-war industrial effort. The February total of 5,632,134 tons reportedly was almost a million tons under production for the month of November. While the government said that the February total was in excess of plan, Poland's production plan appears to be elastic. The original three-year goal for the Polish economy called for coal output to reach 80,000,000 tons in 1949, but the figure has been twice revised downward.

GERMANY — Increased vacation demands were granted early last month to some 517,000 Ruhr mine workers by the United States and United Kingdom Coal Control Board. Under the new regulations, miners are entitled to 12 days paid vacation annually from the first year and may have them after six months' work. Formerly, they worked a full year before becoming eligible for a maximum of six days. The length of vacations



Less resistant and faster conveying.



Rigidly inspected Coalmaster Steel Bits heat treated for high strength, wear, and abrasion resistance.



Auger changing time reduced to a fraction.

3-WAYS FASTER and ALL WAYS BETTER DRILLING with COALMASTER

The Spir-L-Weld of Coalmaster augers provides a smoother, fast conveying flight surface with reduced resistance and less strain on the operator or equipment.

Coalmaster Bits are engineered and designed for scientifically correct cutting edges and accurate bevel to achieve fast, true cutting. Secured by Coalmaster patented Z-type wedges, they are rigidly positioned in perfect alignment.

Time lost in auger changes is a thing of the past with quick make-and-break Hexanspeed couplings. Auger changes are a matter of seconds. Note how this high strength, rigid coupling (at left) makes possible the tubular core that gives the advantage of light weight augers for underground drilling.



• AUSTIN POWDER COMPANY, Cleveland, Ohio • THE BUDA COMPANY, Harvey, Illinois • DIAMOND SUPPLY COMPANY, INC., Evansville, Indiana
• DOOLEY BROTHERS, Peoria, Illinois • ILLINOIS POWDER MFG. CO., St. Louis, Missouri; Denver, Colorado; Salt Lake City, Utah • JOY MFG. CO., Main Office: Pittsburgh, Pa.; Subsidiaries and Representatives in 37 Countries • SALEM TOOL COMPANY, Salem, Ohio • BRITISH-AMERICAN INDUSTRIES, LTD., New York City, New York • BALIMO, LTD., London, England.

Fire Hates This Building



One big reason why Standard ARMCO STEELX Buildings are so popular with mining men is their fire-resistant, all-steel construction. You gain added safety for men and materials. Insurance rates are lower. And replacement and maintenance problems are simplified.

STEELX Buildings are excellent for either permanent or temporary sites. It's a simple matter to dismantle, move and re-erect one of these buildings. A small, unskilled crew does the job in a matter of hours. Even after several such "moves" your building remains tight and dry.

You'll like the way STEELX Buildings stay neat and attractive year after

year. There is nothing to get out of order—nothing to crack, warp or rot. Individual sections are made of 18- and 20-gage ARMCO Galvanized Steel. This durable material is two or three times heavier than ordinary galvanized roofing and siding. Long service is assured.

There is a type and size of ARMCO STEELX Building to meet specific mining needs—powder magazines, head houses, engine rooms, cap storage, utility buildings, offices and many others. Write today for complete information. Armco Drainage & Metal Products, Inc., 775 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation.



ARMCO STEELX BUILDINGS

now increase with the length of service, miners receiving from 14 days after five years to 21 days after 20 years' work. Other of the miners' demands yet to be settled include increased meat and fat rations, expanded hospital facilities, improved safety devices and repair or replacement of damaged or obsolete equipment.

NEW DELHI, INDIA—India's coking coal resources, expected to be exhausted in 10 to 20 years at the present rate of consumption, can be considerably extended by suitable blending, according to research work recently completed by the Council of Scientific and Industrial Research.

As the result of laboratory, pilot-scale, and full-scale oven tests, it was reported that considerable quantities of feebly caking coal can be mixed with good caking coal to yield sound metallurgical coke. The researchers found that when mixed with good caking coal of index 15 or over, coals of a caking index of 13 or 14 may be used to the extent of 30 to 40 percent, coal of caking index 8 to 12 to the extent of 20 to 30 percent, and coal of caking index less than 8 to the extent of 10 to 20 percent. Further verification tests are under way.

Ayrshire Farm Subsidiary Seeks Effective Land-Use

Extensive experimental work in the effective use of strip-mine land for agricultural and conservational purposes recently was outlined by Robert P. Koenig, president, Ayrshire Collieries Corp., Indianapolis, Ind. At the same time, Mr. Koenig announced the appointment of Irwin H. Reiss, farm management specialist, as general manager of Meadowlark Farms, Inc., Ayrshire subsidiary.

Meadowlark Farms operates properties in Vermillion, Clay, Sullivan and Pike Counties, Indiana, and Perry and Fulton Counties, Illinois, on coal-bearing land already mined or held in reserve for future mining operations.

Formed only three years ago, Meadowlark already has in operation a widely varied agricultural program designed to maintain reserve land in a high level of agricultural production and to place mined land to its best possible use as soon as possible after completion of mining operations.

Near Clinton, in Vermillion County, Ind., a purebred herd of Hampshire hogs has been established on mined land, and near the Patoka mine in Pike County, Indiana, a nursery project is in full swing.

At its Denmark Farms in Perry County, Illinois, attention is being centered on production of fine sheep and cattle. There are 1,000 breeding ewes on the Denmark Farms and 80 purebred Angus cattle have been imported from Canada to serve as found-

Why the **PENNSYLVANIA GRANULATOR**

GIVES YOU

LESS

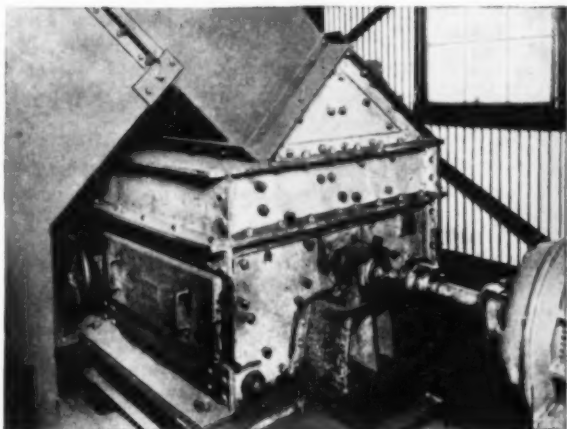
OVERGRINDING

and **MORE**

GRANULATION

Even though the "crushability" of some coal is very high, the Pennsylvania Granulator (because of its design and slow speed) produces less extreme fines than conventional types. This is due to the exclusive Pennsylvania reduction principle that causes the rings to reduce the oncoming feed by a rolling compression, greatly diminishing the attrition or "scouring action", thus giving a more granular, free flowing product.

We have a bulletin that describes this principle in detail. Just drop us a line and we'll send it along. Incidentally, Pennsylvania Granulators are equipped with a non-magnetic, non-power-using Separator that automatically traps tramp iron and other metallics.



PENNSYLVANIA

CRUSHER  **COMPANY**

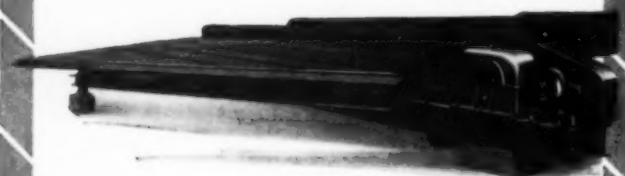
DIVISION OF BATH IRON WORKS CORPORATION

Liberty Trust Bldg., Philadelphia 7, Pa.

New York • Pittsburgh • Chicago • Los Angeles • Birmingham—Associated with Fraser & Chalmers Engineering Works, London

Manufacturers of a complete line of crushing equipment • Hammermills • Single Rolls • Bradmills • Jaws • Gyratories • Granulators • Impactors • Bradford Breakers

Largest Profits Come to Those Who Recognize Trends



More and more, as the years roll on, coal mine operators are finding increased demand for prepared coal sizes. The operator who looks ahead is planning now to take care of this demand with profit to himself.

SuperDuty Coal Washing Tables are becoming increasingly popular with these men because of the two-fold results. The SuperDuty removes slate and other impurities of higher specific gravity, producing the ultimate in clean coal.

So efficient is the SuperDuty that many are finding it profitable to process so-called waste piles, culm banks and river deposits.

For full information ask for Bulletin 119,
Visit our booth No. 809 at the Coal Show.



CONCENCO FEED DISTRIBUTOR

The Concenco Revolving Feed Distributor is a heavily fabricated, all-steel machine, with motor drive requiring only $\frac{1}{2}$ H.P. in operation. This distributor effectively provides a splitting of feed into any desired portions. It is especially suitable for feeding efficiently a battery of coal washing tables.

THE DEISTER ★ CONCENTRATOR COMPANY

983 Glasgow Ave. • Fort Wayne, Ind., U.S.A.

CONCENCO
PRODUCTS

★ The ORIGINAL Deister Company ★ Inc. 1906

dation stock for a purebred beef herd. In addition, there are 360 head of good feeder stock, on which feeding experiments are being conducted to determine the economic factors involved in feeding roughage rather than corn on lands where the topography indicates best adaptability to pasture.

In Fulton County, Illinois, Meadowlark's present operation primarily is a feeder cattle project, with more than 200 head now on pasture. Also in Fulton County, cross-breeding experiments are being conducted with Dexter cattle, a small breed with long horns originally brought here from England.

On all of the properties, extensive agronomy test plots are now in use, seeded with many mixtures of grasses and legumes in a scientifically controlled attempt to determine best species and mixtures to use in planting the banks of land already mined.

As one of the important possible by-products of strip mining is lakes, a series of experiments is being conducted throughout mined-over areas in the production of fish, in an attempt to determine various aspects of commercial fish production.

Mr. Reiss, the new Meadowlark manager, is a native of Illinois and was born and reared on a farm near Freeburg in St. Clair County. He is a graduate of the University of Illinois, where he received a degree in agricultural economics and did graduate work in farm management. For the past three years, Mr. Reiss has been associated with the Calavo Growers of California, cooperative fruit marketing agency serving international markets.

Preparation Facilities

Harry J. O'Brien, Suedberg, Pa.—Contract closed with Wilmot Engineering Co. for Type A jig for stove coal; feed capacity, 15 t.p.h.

Oakwood Coal Co., Pine Grove, Pa.—Contract closed with Wilmot Engineering Co. for two Type A jigs for stove and nut coal; total feed capacity, 30 t.p.h.

Hillside Coal Co., South Tamaqua, Pa.—Contract closed with Wilmot Engineering Co. for one 2½-ft.-diameter Hydrotator for barley coal; feed capacity, 15 t.p.h.

Oxford Coal Co., Seneca washery, Pittston, Pa.—Contract closed with Deister Concentrator Co. for four SuperDuty Diagonal-Deck coal-washing tables, one Lenhy heavy duty NO-Blind vibrating screen and one Concenco revolving feed distributor.

United Electric Coal Cos., Dawson Springs, Ky.—Contract closed with Deister Concentrator Co. for eight SuperDuty Diagonal-Deck No. 7 coal-washing tables and one Type 108 Con-

HERE'S WHAT REPUBLIC DISTRIBUTORS SAY . . .

★ **We Lower Your Costs . . .**
*Considering Service, Inventory
 Savings, and Emergency Co-operation*



* Mr. Ashley De Witt
 Vice Pres. and Gen. Mgr.
 Briggs-Weaver
 Machinery Company
 309 N. Market Street
 Dallas 2, Texas



*In Youngstown, Ohio, and throughout the nation,
 people have confidence in the rubber products made
 by Republic men.*

CHALLENGER TRANSMISSION BELTING

*Top Performance on
 Toughest Service*

Challenger Belting is recommended for all around transmission of power. It has maximum strength for severe stresses and shocks. Hard duck impregnated with live rubber friction gives minimum stretch and freedom from fastener troubles. Challenger has maximum flexing life for drives operating at high speeds over small diameter pulleys.

BUYMANSHIP and SALESMANSHIP *Let's look at your purchasing this way*

Though you want the right price, isn't it product performance, availability, and delivery service that are of primary importance? It is good "buymanship" to consider all these factors when you are purchasing transmission belting, conveyor belting, and hose.

Republic Rubber Distributors, located throughout the nation are competitive in price on transmission belting, conveyor belting, and hose of all kinds. They are prepared to offer recommendations on product applications, they carry large inventories which are available at your beck and call . . . and personal attention to your purchasing requirements is their stock-in-trade. This is good "salesmanship." Only distributors give so much service.

Let's combine your good "buymanship" with Republic "salesmanship" for better product selection. Mail the coupon or write and we will give you the Republic distributor's name in your vicinity.



REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION · YOUNGSTOWN, OHIO
 Lee Deluxe Tires & Tubes · Conshohocken, Pa.

**MECHANICAL RUBBER GOODS BY
 REPUBLIC RUBBER
 DIVISION**

WHO REPRESENTS REPUBLIC IN MY AREA?

REPUBLIC RUBBER DIVISION · LEE RUBBER & TIRE CORP.
 YOUNGSTOWN, OHIO

Name, title _____
 Firm _____
 Address _____
 City _____ State _____



That's right, honey, they're Crosby Clips... so you won't weasel out of this engagement!

Fasten wire rope with CROSBY CLIPS. Safe, simple, speedy... applied anywhere by one man with one wrench. Drop-forged, not cast. Hot dip galvanized. All sizes... for 1/2" to 3" wire rope. Distributors everywhere; made only by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minnesota.

ALSO MAKERS OF THE
AMERICAN HANDWINCH AND
AMERICAN BLOCKS AND SHEAVES

Industry buys more

**CROSBY
CLIPS**

than all other
drop-forged
fasteners!



LOADER

GUYAN Loader Resistors are built into a light but sturdy frame-work—have the same ohmic resistances as specified by the loader manufacturer and have ample current capacity to prevent burn-outs. Designed to fit original mountings.

All terminals are easily accessible, plainly marked and conform with original wiring diagram.



**GUYAN
MACHINERY
COMPANY**

Logan, W. Va.

RESISTORS

Write—
GUYAN
supplies a
complete line
of resistance
products.

cenco eight-way-split revolving feed distributor.

Consolidation Coal Co. (Ky.), Hendrix mine, Deane, Ky.—Contract closed with Deister Concentrator Co. for one SuperDuty Diagonal-Deck coal-washing table.

Guyan River Co., Midkiff, W. Va.—Contract closed with Deister Concentrator Co. for one SuperDuty Diagonal-Deck coal-washing table.

Jonathan Coal Mining Co., Indian Run plant, Allison, Pa.—Contract closed with Deister Concentrator Co. for one SuperDuty Diagonal-Deck coal-washing table.

Rhonda Coal Co., Rhonda plant, Dunmore, Pa.—Contract closed with Deister Concentrator Co. for one Type CRF-105 Concenco revolving feed distributor.

Weirton Construction Co., Weirton, W. Va.—Contract closed with Jeffrey Mfg. Co. for two-compartment unit washer; capacity, 150 t.p.h., 6x0-in. coal.

Coal Publications

Smoke Prevention Association of America, Inc.: Papers Presented at the 41st Annual Meeting. John P. Taylor, 520 Pleasant St., St. Joseph, Mich. 190 pp. 8 1/2 x 11-in.; paper, \$2. Fifteen papers on smoke prevention by consulting engineers, smoke inspectors, railroad experts, equipment manufacturers and others.

Investigation of Fire in the Kings Mine, Princeton Mining Co., Princeton, Ind., by C. A. Herbert, W. A. Gallagher and F. J. Smith. U. S. Bureau of Mines. I.C. 7491. 14 pp. plus charts and drawings. 8x10 1/2-in.; paper. Free. Publications Section, 4800 Forbes St., Pittsburgh 13. Recommendations for minimizing fire hazards in mines with operating conditions like those in Kings mine.

Coals of Chile, by A. L. Toenges, L. W. Kelly, J. D. Davis, D. A. Reynolds, R. F. Abernethy, Thomas Fraser and W. L. Crentz. U. S. Bureau of Mines. Bulletin 474. 106 pp., plus photographs, maps and tables. 35c., Supt. of Documents, Government Printing Office, Washington 25. Results of a two-month study made in 1944.

Centennial History of the Pennsylvania Railroad, 1846-1946, by G. H. Burgess and M. C. Kennedy, with foreword by M. W. Clement. 835 pp. 6x9-in.; cloth. \$3.50; available at Union News Co. stands in principal stations on the railroad and at Doubleday Book Stores, 655 Fifth Ave., New York. Growth of the railroad, expansion into and service to anthracite and bituminous fields, wartime operations, equipment progress, history of corporate and financial structure, government and labor relations.

take your pick of PERFORMANCE



OLIVER 40" Industrial



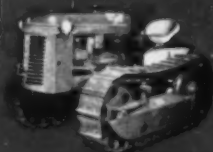
OLIVER 77" Industrial



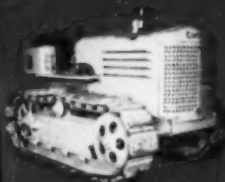
OLIVER 88" Industrial



OLIVER 900" Industrial



OLIVER-Cletrac Model HQ



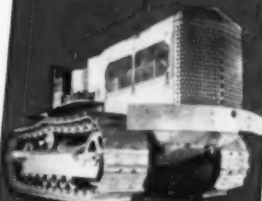
OLIVER-Cletrac Model A



OLIVER-Cletrac Model B



OLIVER-Cletrac Model D



OLIVER-Cletrac Model E

● From the complete line of Oliver "Cletrac" Crawler Tractors and Oliver Industrial Wheel Tractors you can pick exactly the tractor you need and be assured of performance in advance.

The finest in industrial machinery is more than a slogan to Oliver . . . it is an accomplished fact that has been proved in year after year of outstanding performance. Design, materials, workmanship, and plant equipment are all based on one standard . . . the built-in dependability that adds up to more years of service in the field . . . lower operating and maintenance costs to you.

Combine this unsurpassed dependability with the *extra* service offered by your Oliver "Cletrac" Distributor . . . a complete line of industrial crawler and wheel tractors . . . a full line of allied equipment . . . complete service facilities and adequate stocks of genuine Oliver "Cletrac" repair parts . . . plus a broad background of field experience . . . and you'll see why you can take your pick of performance.

"THE SIGN OF
EXTRA SERVICE"



Cletrac

a product of

The OLIVER Corporation

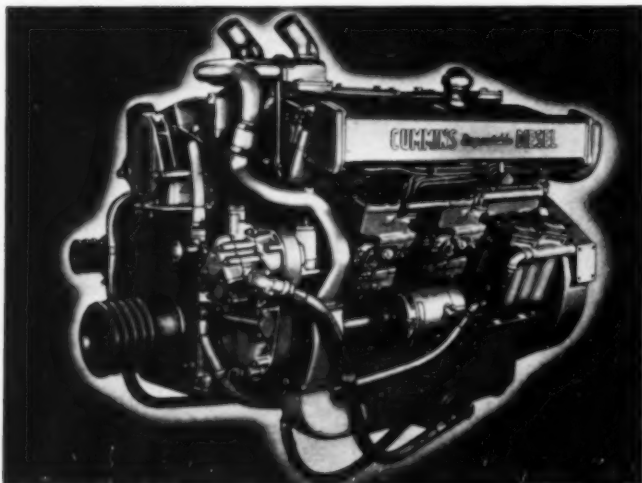
Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio

A Complete Line of Crawler and Industrial Wheel Tractors

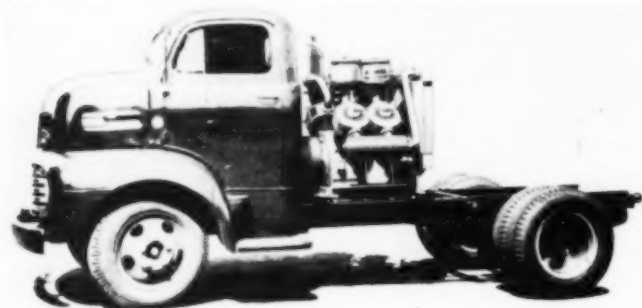


Equipment News

More Detailed Information and Descriptive Literature Normally Are Available on Request Directly to the Manufacturer



DIESEL ENGINES—Its new Model NVHS-1200 announced last month is said by the Cummins Engine Co., Inc., Columbus, Ind., to furnish more power than any high-speed diesel engine now in production. The new four-cycle, 12-cylinder, V-type supercharged Cummins engine has a maximum rating of 550 hp. at 2,100 r.p.m. With its companion Model NVH-1200, a naturally aspirated four-cycle, 12-cylinder V-type diesel, with maximum rating of 400 hp. at 2,100 r.p.m., the new unit has expanded the Cummins' line of single-unit diesels from the former maximum of 275 hp. to the present range of 58 to 550 hp. Designed for off-highway-automotive, shovel, dragline and a wide variety of other portable and stationary applications, the new models offer high operating engine speed, reduced over-all engine dimensions, increased portability and characteristic Cummins fuel economy. The units have a 5½-in. bore, a 6-in. stroke and a piston displacement of 1,486 cu. in. They also feature a completely new fuel pump.



AIR COMPRESSOR—A new and improved 1949 model 160-c.f.m. "Auto-Air" (truck-mounted) compressor has been announced by Davey Compressor Co., Kent, Ohio. The unit is driven directly from the truck engine through a Davey P-85 heavy-duty power take-off and is suitable for mounting directly on the truck chassis or on a platform base. The compressor, which is adaptable to any type of truck body, is of the V-type with three low-pressure cylinders and one high-pressure cylinder. It is 46 in. long, 67 in. wide and 50 in. high.

LIGHT REFLECTING HOSE—Injuries of workers tripping over hose in dimly lighted areas may be decreased with its new industrial wrapped hose that reflects light, according to the Quaker Rubber Corp.



Philadelphia. The reflecting feature of the hose is a tough but flexible plastic tape on which is spread a smooth coating of microscopic glass beads. The tape is affixed to the outer surface of the hose spirally as a permanent integral part at approximately 6-in. intervals and reflects light from cap lamps, headlights, etc. In addition to the safety factor, the reflecting hose is less likely to be run over by equipment, lost or neglected, the company says.

CENTRIFUGAL FAN—Its latest model of "Silentvane" fan, to be known as Design 10, reaches a new all-time high in efficiency, according to the Sturtevant Division, Westinghouse Electric Corp., Hyde Park, Mass. The new fan reaches a static efficiency of 80 percent, as compared with 78 percent for the previous model, the company reports. The increased efficiency was achieved by a combination of several design changes in the fan's blading, wheel, inlet, back plate and scroll, it is said, and together they enable the fan to move more air while consuming less power. The unit will be available in 23 sizes,

At Last! A WIRE ROPE HANDBOOK FOR THE MAN ON THE JOB!

It's new . . . It's different . . . It's easy to understand

J&L STEEL



This 96-page illustrated book is especially written for the machine operator who handles wire rope constantly on his job. And its handy size—4 $\frac{3}{8}$ " x 7 $\frac{1}{2}$ "—fits into your pocket, ready for instant reference. It's yours for the asking!

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in stainless steel and alloy (hi-tensile steels).

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

TABLE OF CONTENTS

	PAGE
Introduction	5
Section I	7
Installing, and Operating Wire Rope	
Unreeling, uncoiling, spooling, fleet angle, sheaves and drums, break-in, smooth operation, lubrication, inspection, saving rope, abuses, when to get a new rope.	
Section II	23
Selecting the Correct Wire Rope for the Job	
Strength, flexibility, resistance to abrasion, crushing strength, dimensions, strands and rope construction, grades of steel, fabrication, type of core, lay, examples of orders, and where to buy rope.	
Section III	47
Catalogue of Standard J&L Wire Rope Constructions	
Section IV	67
Standard Fittings, Slings, and Splicing Service Available with J&L Wire Rope	
Section V	87
General Recommendations for Ropes in Use on Standard Equipment	

SEND FOR YOUR COPY NOW!

Jones & Laughlin Steel Corporation
411 Jones & Laughlin Building
Pittsburgh 19, Penna.

Gentlemen:

Please send me a free copy of your new handbook "Wire Rope is a Machine."

Name

Company

Address

Independent Electric Power for the Mines!

READY-POWER ENGINE GENERATORS

Direct or Alternating Current



Where Electric Power—generated at the mine—is needed—Ready-Power Standardized Engine Generators are available for early delivery. Built for this service from standardized designs developed after years of experience, Ready-Power will give you—QUICKLY—Dependable, Low Cost, Electric Power.

Ready-Power Engine Generators are powered by International Harvester Engines—sold and serviced everywhere by International Harvester Power Unit Dealers.

Rated at $7\frac{1}{2}$ to 85 KW AC or $7\frac{1}{2}$ to 100 KW DC.

The READY-POWER Co. 11231 FREUD AVE.
DETROIT 14, MICH.

FLEXIPIPE

The improved flexible tubing for
mine and tunnel ventilation

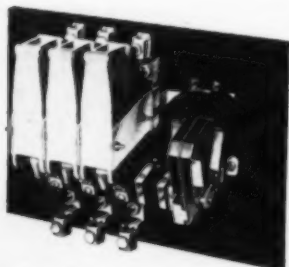
This flexible air tubing is ready for immediate, easy installation. On account of its flexibility, it can be put up or taken down in a fractional part of the time required by more rigid means of face ventilation.

Write for free sample and full information

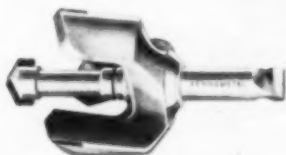
BEMIS BRO. BAG CO.

412 Poplar Street, St. Louis 2, Mo.

with wheels ranging from 1 to 9 ft. in diameter, the largest unit having a capacity of 480,000 c.f.m.



MAGNETIC CONTACTORS—Ward Leonard Electric Co., Mt. Vernon, N. Y., has announced its new Bulletin 4454 Size 4 and Bulletin 4455 Size 5 a.c. magnetic contactors for motor, heater and lamp control. According to the manufacturer, features of these 150- and 300-amp. a.c. magnetic contactors include: identical and interchangeable movable and stationary contacts on both sizes; removable cold-molded are shields for all main poles; an entirely new magnetic circuit permitting positive operation over a wide range even under fluctuating line voltages; accessible solderless clamp-type connectors for line and load terminals; and standardized mounting panels.



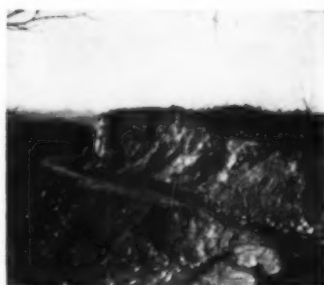
DRILL BIT—A new augerless hitch-drill bit announced by Kennametal, Inc., Latrobe, Pa., is used for drilling horizontal holes at the top of the rib for installing cross-timbers for roof support. The bit has three prongs with built-in solids of Kennametal cemented carbide which function as cutting edges. A pilot attachment is said to prevent cores, give accurate hole location and keep the hole straight. Available in various sizes, the bit can be used on standard post drills and it does not require an auger, it is said.

PLUG-IN BUSWAY—New LTG "Flex-A-Power" plug-in or trolley busway announced by The Trumbull Electric Mfg. Co., Plainville, Conn., is designed to provide both trolley power take-off and a continuous outlet for fluorescent lights and small power tools. The new busway reportedly is the only one of its type in 2-, 3- or 4-pole construction with one compact housing. Incorporating new simplified



124,000-POUND "NITRAMON" BLAST

combined economy and safety
in Kentucky coal stripping operation



Before and after the blast



In shooting sandstone overburden to expose a rich, 14-foot seam of coal in eastern Kentucky, a recent blast with Du Pont "Nitramon" proved the economy and safety of this popular blasting agent.

The blast required 124,000 pounds of "Nitramon," which was loaded in 97 nine-inch vertical holes spaced 24 feet apart and averaging 75 feet in depth. Holes were loaded immediately after drilling to avoid later relocation of drills to open blocked holes—an expensive, time-consuming job on this rough terrain. Many of these loaded holes were exposed to extremely wet weather for more than a month before the blast was fired.

Yet, as the post-blast photo shows (at left), results were excellent and shovels could quickly and easily start digging the 190,000 cu. yds. of well-broken rock.

Ask any Du Pont Explosives representative for complete information about "Nitramon" . . . its economy and safety for large or small stripping operations.

E. I. DU PONT DE NEMOURS & CO. (Inc.)
EXPLOSIVES DEPARTMENT
WILMINGTON 98, DELAWARE

*Reg. Trade Mark for nitrocellulose blasting agent

DU PONT EXPLOSIVES

BLASTING SUPPLIES AND ACCESSORIES

Check these features of "Nitramon"



Du Pont "Nitramon"—the safest blasting agent—cannot be detonated with commercial blasting caps. It is insensitive to open flame, friction or falling objects. It is safe to handle . . . safe to load, and a "Nitramon" Primer (itself relatively insensitive) detonates the charges.

Loading far in advance of firing a blast is a common, safe practice, because "Nitramon" is packed in water-tight metal cans. It is also non-head-ache-producing, a popular quality . . . particularly in hot weather.

In Underground Coal Mining . . . Du Pont Permissibles are Tops

"MONOBEL" AA

An outstanding producer of quality big lump coal and the most widely used permissible of all.

"LUMP COAL" C

An economical permissible with a slow, heaving action that places big lump coal away from the face for easy loading.

"GELOBEL" C

High-velocity gelatinous permissible with excellent water-resisting qualities. Ideal for hard rock and slate work.



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY



Sales and Service on these GENERAL LINE MINE SUPPLIES

Acker Core Drills	Chicago Pneumatic Tools	Marlow Pumps
American Steel & Wire Cable	Cincinnati Electric Tools	McCarthy Overburden
Austin Powder Co.	General Electric Line	Horizontal & Vertical Drills
Atlas Lathes & Drill Presses	Glidden Paint Company	National Batteries
American Brattice Cloth	Grey Rock Brake Lining	Page Drag Line Buckets
American Crayon Co.	Lincoln Lubrication Equipment	Plomb Tools
Bearings—All Types	Lincoln Welding Equipment	Pyrene Fire Equipment
Coalmaster Drilling Equipment		Sheppard Diesels
		United States Rubber & Belting

DIAMOND SUPPLY COMPANY, INC.
EVANSVILLE, INDIANA
MADISONVILLE, KENTUCKY

383 Femco TROLLEY-PHONES

installed in mines in the past twelve months



CONSTANT SUPERVISORY CONTROL
through
CONTINUOUS COMMUNICATION
from mine-mouth to face...

INCREASES TONNAGE

Pays for itself very soon

PROMOTES SAFETY

Quick reports—quick action

SPEEDS OPERATIONS

No stopping to telephone

ACCEPTED AND APPROVED

By men who mine

You talk in a natural voice to any moving or stationary location anywhere in the mine.

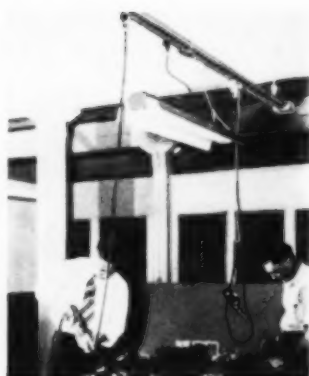
Each station is equipped with a PRESS-TO-TALK MICROPHONE and a rugged, compact speaker.

Ask for demonstration

FARMERS ENGINEERING AND MANUFACTURING CO.

549 BRUSHTON AVE. • PITTSBURGH 21, PA. • CHURCHILL 5050

Specialists in Underground Radio Electronics



hanging and joining methods that are said to speed up installation, the LTG is rated at 50 amp. 250 volts a.c. or d.c., has two or more circuits that can be run in one housing and still be controlled separately, and features a design permitting balanced loads. Bulletin TEC-3 is available from Trumbull.



EMPLOYEE COMMUNICATION—A complete display program to sell the advantages of the "American Opportunity System" to employees has been announced by the Elliott Service Co., 30 North MacQuesten Parkway, Mt. Vernon, N. Y. Plan includes use of newly designed, hammer-tone silver-finished steel glass-enclosed bulletin-board, with either three, four or five panels, together with 17x22-in. multi-colored displays currently covering "The Profit Story," accident prevention, cost and waste reduction and quality workmanship. Daily change of selected news pictures assure employee interest, the company states.

PLATE MAGNET—New self-cleaning Perma-Plate, according to the Dings Magnetic Separator Co., 4740 West McGeogh Ave., Milwaukee, Wis., is a permanent non-electric magnet unit designed for installation over conveyor belts, spouts or chutes and consists of a heavy-duty Perma-Plate magnet and a motor-driven endless cross belt. Tramp iron is held on the underside of the cross belt and carried to the side beyond the magnetic field for discharge. This Alnico plate magnet is said to be equally

FOR Proved* Protection AGAINST CABLE FIRES...

USE Rome 60 MINE CABLES

* Strict compliance with State of Pennsylvania and Federal Bureau of Mines' flame-resistant requirements is substantiated by notarized test reports on each production run.



For that Rome 60 extra margin of safety . . . look for the State of Pennsylvania approval No. P-105 molded in the jacket.

See booth No. 309 at the Coal Convention and Exposition of the American Mining Congress.



When you standardize on Neoprene Jacketed Rome 60 Mine Cables you are assured of the ultimate in resistance to flame. Long before flame resistance became a requirement of law, Rome 60 Mine Cables had demonstrated their durability under conditions of acidulous waters, corrosive vapors, abrasion . . . as well as, high resistance to flame. As attested by flame test figures below, Rome 60 consistently comes well within the permissible flame propagation of 14 inches.

For added safety, and where compliance with Federal Bureau of Mines Schedule 2E is required, Rome 60 Mine Cable is available with adequate grounding construction.

For safety . . . plus dependable service . . . specify Rome 60.

PROPAGATION

Type of Cable	Size	Amps Load'd	Heating Time		Burning Time		
			Min.	Sec.	Min.	Sec.	
Locomotive Gathering	2 AWG	480	12	50	3		5"
Concentric Mining Machine	6 AWG	270	8	40	4	15	7 1/4"
Parallel Duplex Mining Machine	2 AWG	480	12	45	1	35	6"
Type "W" Power	2 AWG 3 Cond.	480	13	45	8	10	7 1/4"

Test results taken from notarized test report on file.

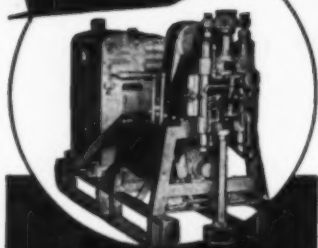
FROM BAR TO FINISHED WIRE

ROME CABLE
CORPORATION
ROME • NEW YORK



Diamond Core Drilling

CONTRACTORS

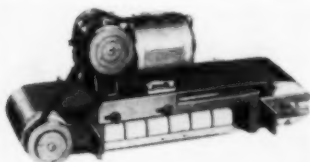


Testing mineral properties with our light gasoline drills. **SATISFACTORY COAL CORES GUARANTEED.** Ground solidification by our pre-pressure grouting method for shafts. Wet mine areas, horizontal holes for drainage. Electric drills for inside mine drilling.

MOTT CORE DRILLING CO.
HUNTINGTON • WEST VIRGINIA



EARTHMOVER—New addition to the line of R. G. LeTourneau, Inc., Peoria, Ill., is the E-25 Carryall scraper. Powered by a 240-hp. two-wheel prime mover, the unit features fingertip electric control, positive-power steer, Tournamatic differential, increased flotation and sure-footed traction, the company reports.



effective with wet or dry materials and is available in a wide range of sizes.

SAFETY HATS—New "Turtle-Back" safety helmets and caps announced by Industrial Products Co., Philadelphia 33, are made of a multiple layer of cloth-impregnated bakelite molded under 250-lb. pressure to produce a tough shock-resisting dark-tan, lightweight shell, the company says. The liner is attached so that weight is evenly distributed and has air space at the sides and top for free circulation of air. The soft leather sweatband needs no breaking in and may be adjusted to fit all head sizes, 6½ to 8, it is stated.

**These Distributors
can give you ...**

INSTANT SERVICE ON MESCO WELD RAIL BONDS

BRITISH COLUMBIA

Railway & Power Engineering
Corp., Ltd.
1016 Mainland St.,
Vancouver, B.C.

ILLINOIS

Brad Harrison Company
807 South Boulevard
Oak Park, Illinois

INDIANA

Evansville Electric & Mfg. Co.
600 West Eichel Avenue
Evansville, Indiana

KENTUCKY

Southeastern Sales Company
Harlan, Kentucky

UTAH

Wetzel Equipment Agency
Salt Lake City, Utah
Price, Utah

WEST VIRGINIA

Banks-Miller Supply Company
Huntington, West Virginia

Buchanan-Williamson Supply Co.
Grundy, Virginia

Maynard's Machine & Electric Co.
P.O. Box 218
Williamson, West Virginia

Universal Supply Company
1207 South Kanawha Street
Beckley, West Virginia

Bluefield Supply Company
Bluefield, West Virginia

Controller Block & Supply Co.
Kermit, West Virginia

Pellish and Company
111 Fidelity Building
Wheeling, West Virginia

Virginian Electric Company
P.O. Box 2833
Charleston, West Virginia

Williamson Supply Company
Williamson, West Virginia

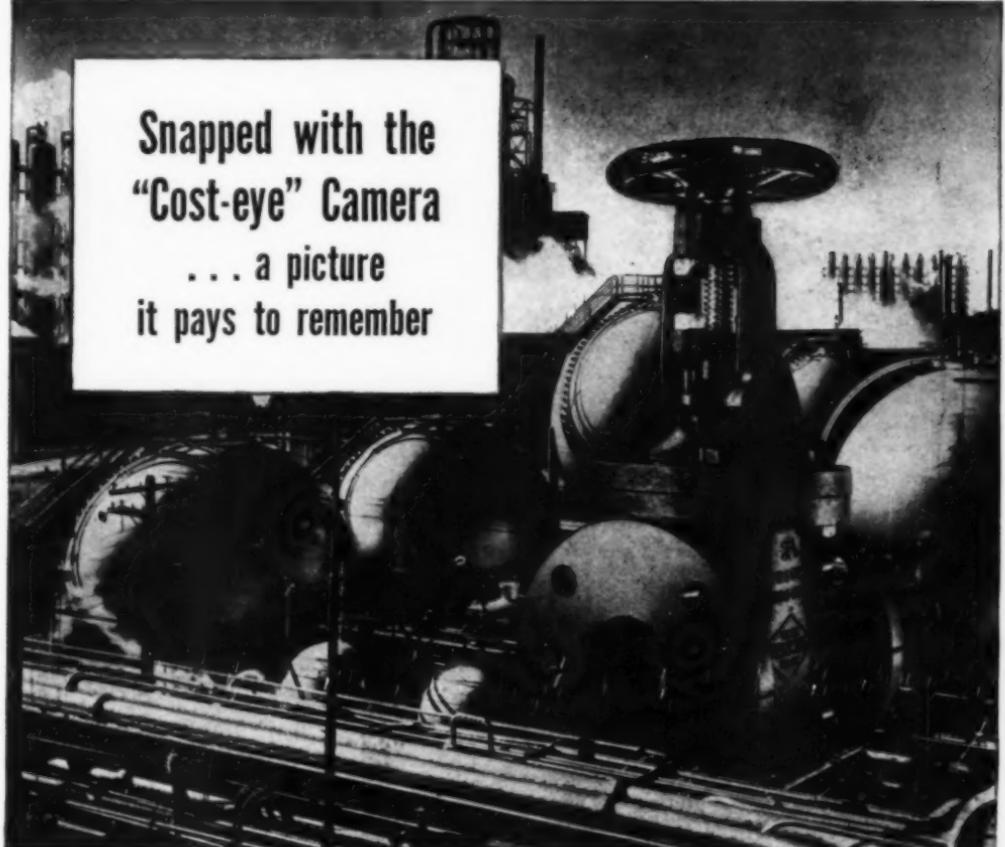


MOTOR LOAD-TESTING—Hydraulic dynamometers, originally designed and built for its own use, have now been made available to electric-motor repair shops and others for accurate load-testing of motors, Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo., has announced. Tests possible with the dynamometer include idle, pull-in, pull-up, full-load and locked. The locked test can be made without having to shut off the motor to insert a locking pin or similar device, the company reports. The dynamometer is foot-controlled and both the operator's hands are free. Exact foot-pounds of torque can be

Mosebach makes 18 types of rail bonds. Inquire directly or through your distributor.

MOSEBACH ELECTRIC & SUPPLY COMPANY
1115 ARLINGTON AVE. - PITTSBURGH 3, PA.

Phone: HEmlock 8332



**Snapped with the
"Cost-eye" Camera
... a picture
it pays to remember**

IF A CAMERA could be constructed with an eye to costs, this is the picture you'd get of a synthetic rubber plant. By showing *all valves as one valve* it brings into proper perspective the valve investment in any plant, any large building where operation involves fluid control. Collectively, valves represent a major expenditure ... yet too often, they are selected with "petty cash" consideration.

IT WILL PAY MANAGEMENT to keep this picture in mind. With wages and material costs the highest ever, valve maintenance costs must be

watched as carefully as operating expense of larger plant units.

EXCESSIVE MAINTENANCE of one inferior valve is insignificant, but multiplied by thousands, it is a serious drain on operating budgets.

JENKINS BROS. helps you meet this problem two ways. First, by building extra endurance into Jenkins Valves, making them the longest-lasting, lowest-upkeep valves that money can buy. Second, with advice from Jenkins Engineers on any question of proper selection, installation, inspection


or maintenance.

For all new installations, for all replacements, rely on Jenkins quality and engineering for lowest valve costs in the long run. *Sold through leading Industrial Distributors everywhere.*

Jenkins Bros., 80 White St., New York 13;
Bridgeport, Conn.; Atlanta; Boston;
Philadelphia; Chicago; San Francisco.
Jenkins Bros., Ltd., Montreal.




"PREVENT VALVE FAILURE" is a 28-page guide to valve economy, fully illustrated, with case histories of valve damage, and recommendations for its prevention by proper selection, installation, inspection, and maintenance. **FREE** on request. Write: JENKINS BROS., 80 White St., New York 13, N. Y.

LOOK FOR THIS  DIAMOND MARK

**JENKINS
VALVES**

Types, Sizes, Pressures, Metals for Every Need





... with **OSMOSE**
TREATED MINE TIMBERS

SAVE UP TO 25¢ PER TON. This is it! The competitive coal market is back. All operations must utilize every possible cost-cutting device. Why not *BEGIN* where you can save most? Timber represents 40% to 60% of your supply bill. We can cut this cost by making mine timber **LAST LONGER**. You save on timber! You save on replacement! With Osmose you can make any wood species, even beech, gum hickory, ash, elm and maple, into long-lasting timbers.

1 We can furnish you with OSMOSE TREATED TIMBER

We can supply you with Osmose-treated square-sawn, slabbed or round timbers, ties, collars, posts, lagging, caps, wedges or tippie timbers from one of our treating plants. These select OSMOSE-treated timbers will render many years of **EXTRA** service.

2 We will CUSTOM-TREAT TIMBERS furnished by you

We will OSMOSE-treat your own timber at our nearest treating plant. Remember, this treatment can be applied to **ANY** wood species, even beech, gum, hickory, ash, elm and maple.

3 We will furnish MATERIALS and YOU can treat your own timber

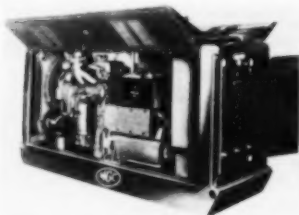
By constructing an inexpensive vat and following directions, you can treat your own green timber with OSMOSALTS.

➡ **WRITE FOR COMPLETE DETAILS ON THE TYPE OF OSMOSE SERVICE YOU PREFER**

OSMOSE WOOD PRESERVING COMPANY OF AMERICA, INC.
BUFFALO, NEW YORK

Representatives in: Pittsburgh, Denver, Birmingham, Ala., St. Louis & Clarkburg, W. Va., and New York City

read directly from the gage furnished. Three units, with capacities of 30 ft.-lb., 30 to 300 ft.-lb., and a combination of the two, are available.



GENERATOR SETS—A new line of gasoline- and diesel-engine-powered generator sets, announced by Motor Generator Corp., Troy, Ohio, is available in a.c. output, single or three phase, 50 or 60 cycle, from 5 to 60 kw. Each set is self-contained, fully equipped with controls, radiator, fuel tank and weatherproof canopy, and is delivered factory-assembled and completely wired. A.c. or d.c. generators up to 25 kw. are available with gasoline engine, while units from 20 through 60 kw. have diesel engines.

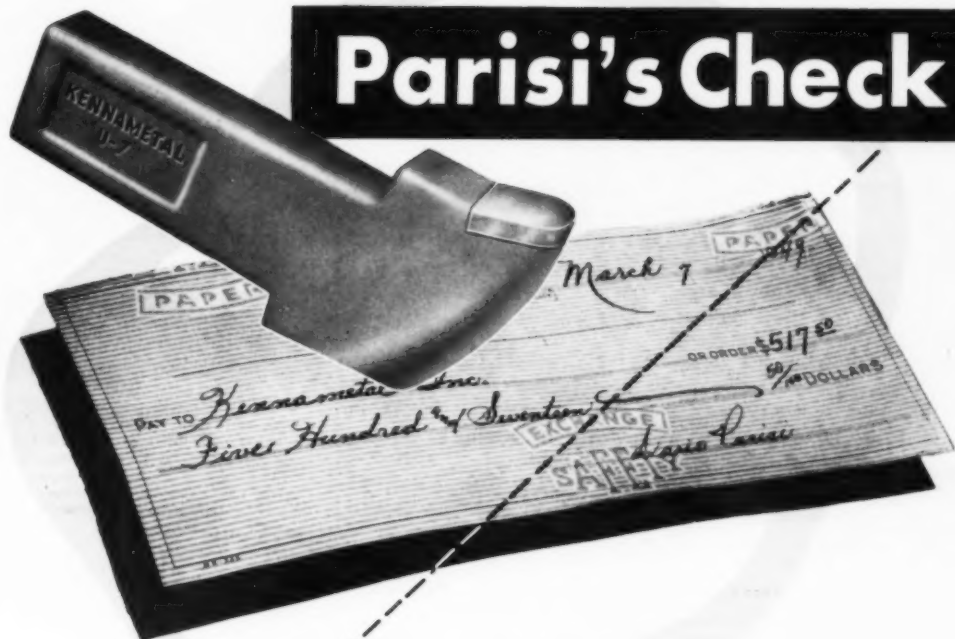


HAMMER ADAPTOR—New "Hamer-Drill" adaptor, according to the manufacturer, Hamer-Drill, Box 158, Planetarium Station, New York 24, can be placed in any 1/4-in. electric drill to readily convert it into a compact portable hammer for drilling holes in tile, brick, cement and stone. The unit is designed for small screw sizes, handling all Rawldril sizes from 5/32 to 3/8 in. The Hamer-Drill, held in the hand in the illustration, measures 6 1/2 x 1 1/8 in. and weighs less than 3 lb.

DIESEL-ENGINE LUBRICANT—New "Extra-Treated" diesel oil designed to counteract the harmful effect of high-sulfur fuels has been reported by the D-A Lubricant Co., Inc., Indianapolis, Ind. It is an additive-type lubricant designed for use in high-speed diesel engines and reportedly will eliminate engine sludging and decrease liner wear for certain-type engines operating on fuels with a sulphur content above 0.5 percent.

DEWATERING SCREENS—Wedge Wire Corp., 5602 Clark Ave., Cleveland 2, Ohio, has announced its newly designed "Kleenzlot" aluminum de-

Parisi's Check



For Coal Cutting Efficiency



Mr. Dario Parisi, Superintendent of the Allegheny River Mining Company, uses Kennametal U-7 Heavy Duty Bits exclusively for cutting the tough Kittanning seam near Kittanning, Pa. His written reasons at the right are based on his 31 years experience with this mine.

Mr. Parisi states: "When using conventional bits, a change of bits from one to three times per cut was necessary; Kennametal Bits are changed every three working shifts. In many instances, they could be used another 24 hours without being sharpened. Also, we now have one bit sharpener instead of four—effecting a saving of \$39.05 per day."

This typical example of Kennametal bit performance—saving 40 to 120 bit changes per day—saving 75% on bit sharpening cost—saving an appreciable amount of money on bit cost—are reasons why more mine operators use Kennametal Mining Machine Bits to reduce cutting costs and increase coal production.

Booklet M-5 gives complete particulars. We'll be glad to send you a copy.

KENNAMETAL Inc.

LATROBE, PA., U. S. A.

THE WORLD'S LARGEST MANUFACTURER OF CEMENTED CARBIDE MINING TOOLS

- ✓ Longer Bit Life
- ✓ Less Dust
- ✓ Less Bit Changing
- ✓ Faster Cutting
- ✓ Lower Bit Cost
- ✓ Cutters More Satisfied

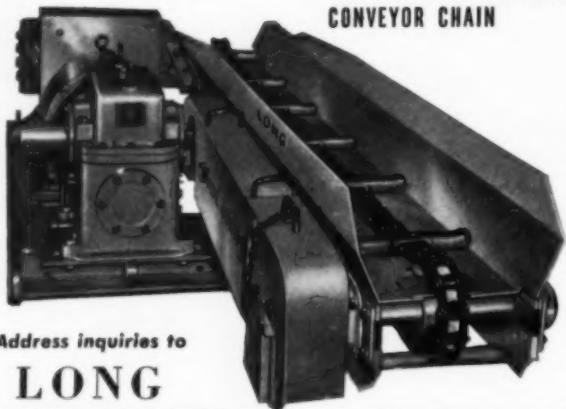
NEW LONG SUPER CHAIN CONVEYOR

"400"

*No bent or
broken flights*

"400" SUPER Chain Conveyors are now in use in six states, over 100 mines, setting new standards for continuous production. Write for information on the "400" Series - Room Conveyors, Face Conveyors, Utility Conveyors, Elevators and Gathering Conveyors.

with LONG "SUPERFLITE"
CONVEYOR CHAIN



Address inquiries to

LONG
SUPER MINE CAR COMPANY

FAYETTEVILLE, W. VA.

**THE WAY TO
BEARING
ECONOMY**

PROMET

THE
ENHANCED
BRONZE

A SPECIFIC FORMULA FOR EVERY REQUIREMENT ASSURES LONGER SERVICE

Asle bearings, journal liners, bushings, and wearing parts for General Electric, Bullis, Goodman, Oldroyd, Jeffrey, Worthington and Joy equipment. Promet bar stock, Round, hexagon, square. Rough cast, semi-finished. Corad stock all sizes (by 1/4" steps) from 1/2" minimum core to 12" O.D. and 12" lengths. Six grades of hardness. Promet lead or tin base babbitt.

WRITE FOR FREE FOLDERS

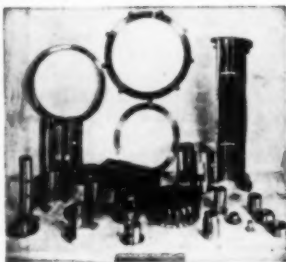
THE AMERICAN CRUCIBLE PRODUCTS CO.
1307 Oberlin Ave., Lorain Ohio, U. S. A.

Prompt deliveries can usually be made
from stocks maintained at

BECKLEY, W. VA., The Universal Supply Co.
1207 B. Kanawha St. Phone 7307

KERMIT, W. VA., Controller Block
& Supply Co. Phone 301

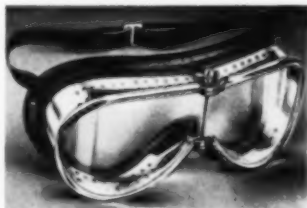
LORAIN, OHIO, The American Crucible
Products Co. Phone 6983



Other Representatives

ALTON, ILL., Frank E. Rhine, Phone 3-9624
825 Blair Ave.
BIRMINGHAM 3, ALA., P. B. Keller, Phone 7-2383
Jr., 1008 First Natl. Bldg.
MT. LEBANON, PA., J. E. Nieser, Phone LE-9876
720 Rensselaer Ave.
NEW YORK CITY, Trans American
Commerce Co., Inc., 165 B'way Phone 7-4340

watering screens. The screens incorporate the company's "Wedge Wire" construction, with the wedge construction of the screening wires featuring a non-clogging, non-binding principle. The light-weight of Kleenzlot aluminum screens is said to facilitate use on vibrators, and a wide selection of lengths, sizes and screen openings are available, according to the manufacturer.



GOGGLE—Its Panoram goggle is now available with molded rubber cushions to provide extra wearing comfort and protection. American Optical Co., Southbridge, Mass., reports. Made of soft pliable non-toxic Neoprene sponge rubber, the cushions can be slipped into place very easily without stapling, sewing or cementing. A new pouch-type plastic case to protect Panoram goggles when not in use also is now available, the manufacturer reports.

Industrial Notes

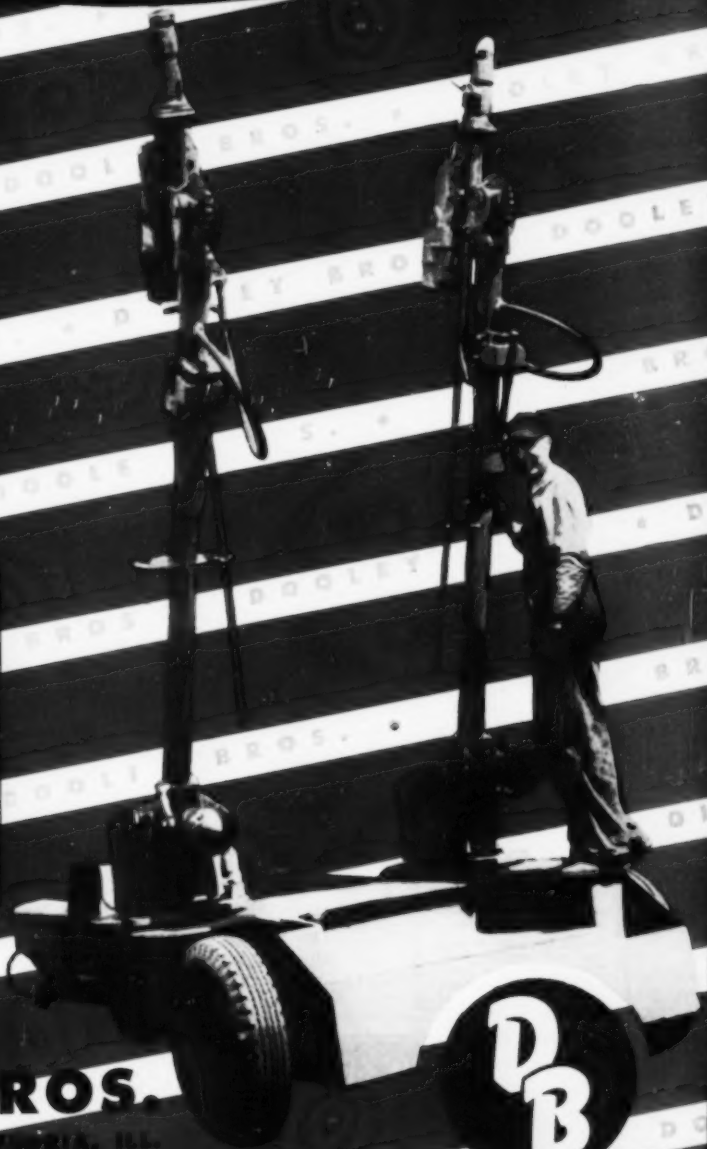
Goodman Mfg. Co., Chicago, has appointed Dale Hagenbook chief engineer. Mr. Hagenbook joined Goodman in 1937 and has served as assistant chief engineer to W. W. Sloane since 1940. Mr. Sloane is now serving as vice president in charge of engineering.

Ohio Brass Co., Mansfield, Ohio, has elected W. A. Springer vice president and treasurer of the company, and Ephraim H. Brown, secretary. Louis J. Ott has been named general sales manager, and R. A. LeFevre, advertising manager. Mr. Springer joined the company in 1912 and has been secretary-treasurer since 1933. Mr. Brown, who started in the sales department in 1924, was formerly assistant to the president and to the senior vice president. Mr. Ott joined the company's advertising department in 1928 and since 1935 has been advertising manager. Mr. LeFevre has been associated with the advertising department since 1936.

Mine Safety Appliances Co., Pittsburgh, Pa., has added Henry S. Carter to its mining-sales field staff, with offices in Bluefield, W. Va. Mr. Carter has spent 12 years in the mining fields of West Virginia and Virginia and was assistant superintendent, Jenkin-

DOOLEY BROS.
SUPERIOR
5600 DRILL ARM & 5100 DRILL

COMPACT, ADAPTABLE,
RUGGED . . . built to do
one job and do it BETTER,
SAFER, FASTER! The re-
sults? Higher production
at lower cost for YOU!



DOOLEY BROS.
1201 S. WASHINGTON ST. - PEORIA, ILL.





148 SLOT SIZES in Flanged Lip Screens meet exacting requirements

As specifications for sizing and de-watering coal have become increasingly exacting, the advantages of HENDRICK FLANGED LIP SCREENS are more and more widely recognized.

The staggered slots are practically non-clogging, and the step at the end

of each slot aids in producing faster and cleaner separation of the material. Made with short, medium or long slots. 148 different standard slot sizes are available. Write for new edition of Flanged Lip Screen booklet.



Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Mitco Open Steel Flooring
"Shur-Site" Trends and
Armorgrids

HENDRICK

Manufacturing Company

41 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

*A New Locomotive
Backed by
25 Years' Experience
in the Battery
Locomotive field!*

GREENSBURG "RANGER" STORAGE BATTERY LOCOMOTIVES



This locomotive being used for main line haulage at the Blacksmith Coal Company, Novinger, Missouri. This is a 4½ ton locomotive, operating on 30" gauge track. This locomotive built from 3½ to 10 tons — either single or double motor drive — 16" to 56½" track gauge.

All Locomotives
CUSTOM-BUILT
to your requirements

FEATURES

Oil-tight, leak-proof transmission. Use regular auto oil; change every 6 months.

Strong. Simple. Low maintenance cost.

Extra-long journal springs assure better trackability.

Large motor, to assure more horse power per ton weight of locomotive.

Can be equipped with hydraulic brake.

MORE
HAULING
FOR LESS
STORAGE
BATTERY
CAPACITY

THE GREENSBURG MACHINE CO.

Makers of Custom-Built Storage Battery Locomotives

101 STANTON ST., GREENSBURG, PA.

Jones mine, Pocahontas Fuel Co., prior to joining M.S.A. Mac L. Crews has joined M.S.A.'s industrial sales field force, with headquarters in Nashville, Tenn. Mr. Crews formerly was associated with the National Mine Service Co. as a field representative.

F. H. McGraw & Co., New York, has elected three new officers. Urban D. Gosselin, formerly assistant to the president, has been elected vice president; Harry W. Mathews, McGraw project manager, assistant to the president; and Frank J. McClean formerly secretary of the company, controller. Messrs. Gosselin and McClean will continue to work out of the company's Hartford office, covering projects under way in nearly every section of the country. Mr. Mathews, construction superintendent on the \$12,000,000 coal-preparation plant McGraw is building for Jones & Laughlin at East Fredericktown, Pa., will remain on that project until it is completed and ready for operation this summer.

Stearns Magnetic Mfg. Co., Milwaukee, Wis., has appointed Richard H. Koehler advertising manager. Formerly advertising manager for Vincent-McCall Co., Kenosha, Wis., Mr. Koehler succeeds Hugh Sharp, who has resigned to join Advertising & Publicity Associates, Milwaukee, as an account executive.

The Okonite Co., Passaic, N. J., has elected Albert F. Metz president and general manager. Mr. Metz, who joined the company in 1919 and was previously vice president and treasurer, succeeded Frank C. Jones, who died Jan. 20. Stephen A. Wilson, general counsel, has been elected a director and Donald R. Stevens has been named executive vice president and a member of the executive committee. Mr. Stevens, who was formerly vice president and works manager of the company's three plants, joined Okonite in 1921.

Timken Roller Bearing Co., Canton, Ohio, has appointed Seward T. Salvage, assistant district manager of industrial bearing sales in its Cleveland office since his return from the Navy in 1945, sales promotion manager of the company. T. F. Rose, Cincinnati branch manager of Timken's service sales division, has been named manager of Timken Roller Bearing Service & Sales, Ltd., Toronto, Ontario, Timken's Canadian subsidiary, succeeding C. E. Webster, deceased. H. C. Telford, assistant manager of the Timken branch in Atlanta, Ga., has been made Cincinnati manager.

Link-Belt Co., Chicago, has named Roy E. Jones export manager of the company, with headquarters in New York City, succeeding Carl A. Woerwag, who has retired because of ill health. Mr. Jones, assistant export manager since 1944, joined Link-Belt



He's a thief of the "sneak" variety — pilfering, robbing, stealing valuable production from machines in hundreds of mines. The cost of his thievery is staggering — but he can be stopped!

You may not even suspect he's at work in your mines. You may have to look close to find him. But there's a big reward when you do.

For example . . . here are some places to look.

Are you still using the old-fashioned "hand and paddle" method of filling grease guns — wasting time, wasting grease, risking bearing damage from coal dust? There's a thief!

You can save 3 $\frac{3}{4}$ man hours for every 100 lbs. of grease by simply improving your hand gun loading methods.

Are you lubricating machines the laborious, outworn "hand and muscle" way? Watch for losses here!

You can save up to 23.9 man hours in applying each 100 lbs. of grease.

What about "down-time" — production interruptions for lubrication of cutters, loaders and cars, or for repairs due to faulty lubrication. Here's big thievery!

You can make lubrication foolproof and reduce mining machinery tie-ups. For example, with Alemite Electric Grease Guns, mine car bearings get safe, positive lubrication almost "on the fly."

Now are you suspicious that a production thief is working in your mines?

His disguise is wasteful, old-time, hit-or-miss lubrication methods that add to the costs of production.

There's one proven way to stop this loss.

An Alemite representative can tell you in 10 minutes how Alemite Methods will simplify and better organize your lubrication procedures. He can show you how mechanized lubrication from barrel-to-bearing will increase your coal tonnage and profits.

Telephone your Alemite Distributor now. Or write to Alemite, 1838 Diversey Parkway, Chicago 14, Illinois.

ALEMITE

REG. U.S. PAT. OFF.

**MODERN LUBRICATION METHODS
THAT CUT PRODUCTION COSTS**



CLEAN COAL IS AN ASSET

Dustproof your coal with
WYANDOTTE CALCIUM CHLORIDE

• Coal that's free from dust and dirt—easy to handle—naturally wins friends among dealers and consumers alike. They'll remember you in the future if you dustproof your coal now with Wyandotte Calcium Chloride.


• Treatment of coal with Wyandotte Calcium Chloride is safe, economical and easy. A little does a lot to dustproof your coal and give it a sheen that will catch the consumer's eye.

• Investigate today the many advantages of this process. Mail the coupon for full information and literature about Wyandotte Calcium Chloride.

Wyandotte Chemicals Corporation
Michigan Alkali Division
Wyandotte, Michigan

Send me literature and further information about the uses and advantages of Wyandotte Calcium Chloride.

Name
Address
Title

 **Wyandotte**
REG. U. S. PAT. OFF.
CALCIUM CHLORIDE
WYANDOTTE CHEMICALS CORPORATION
Michigan Alkali Division, Wyandotte, Michigan

in 1927. J. H. Oakes, formerly division engineer, has been appointed sales manager, enclosed drives, with headquarters at the company's Philadelphia plant, and will be assisted by Harry F. Kurz as representative, enclosed drives, with headquarters at the Pershing Road plant in Chicago.

SKF Industries, Inc., has named Stuart H. Smith Cincinnati district manager. Mr. Smith, who joined SKF in 1934, has been assistant district manager of the Detroit office since 1944. Among those recently named field representatives for the company are: A. R. Ehrnschwender, Cincinnati; and J. T. Paradise, Atlanta.

Chicago Pneumatic Tool Co., New York, has appointed Edward L. Fish sales engineer, mining division, Pittsburgh, Pa., district. Mr. Fish formerly was with the Ohio Brass Co. as development engineer and prior to that was employed by the bituminous-coal section, U. S. Bureau of Mines.

B. F. Goodrich Co., Akron, Ohio, has announced several changes in its industrial products sales department. J. R. Thompson has been named manager of flat belting, conveyor, elevator and transmission belting, and Paul W. Van Orden, manager of V-belts and packing. Mr. Thompson, with the company since 1930, for the last two years has been manager of the Denver district in which post he is succeeded by William A. Schaub, a salesman in that district for the past 24 years. Mr. Van Orden has been with Goodrich 21 years, all in belting sales and engineering. I. N. Kimsey, formerly manager of the Akron district, has been named field sales manager of the department. Mr. Kimsey is succeeded by John M. Cooney, manager of the Boston district for the last two years.

Allis Chalmers Mfg. Co., Milwaukee, has appointed R. F. Garity eastern industrial territory manager of its tractor division, with headquarters in Milwaukee. Mr. Garity joined Allis-Chalmers in 1942 as an expeditor and since 1946 has been industrial district manager for the company's Minnesota territory.

Kennametal Inc., Latrobe, Pa., has appointed James V. Wilcox and Jason C. McGuire sales and service representatives. Mr. Wilcox is located in Provo, Utah, serving Utah, Wyoming and western Colorado. Mr. McGuire is located in Eastbank, W. Va., serving the central West Virginia territory.

Ansul Chemical Co., Marinette, Wis., has opened a new district office in Knoxville, Tenn. Joseph F. Ziemann, 10-year veteran in the fire protection field, and Troverse F. Schmidt, former fire-prevention engineer for the Air Transport Command, will direct the work of the new office.

Syntron Co., Homer City, Pa., has appointed George L. Chedsey super-

FOR SAFETY'S SAKE, SUPERIOR COUPLINGS



Drop Forged Links

Drop forged for strength, Superior Swivel and Single Link Couplings are built to stand the gaff. No welds to let go with resulting wrecks. Superior Couplings on your mine cars will prevent accidents and reduce haulage costs. Order Superior Couplings for your replacements and specify them on new equipment.

DROP FORGED SWIVEL COUPLINGS



PITTSBURGH KNIFE & FORGE CO.

1421 Reedsdale St., N.S.
Pittsburgh 12, Pa.



MERRICK WEIGHTOMETER

While material is smoothly moving along a conveyor, the MERRICK WEIGHTOMETER keeps a continuous and accurate record of weights. Total weight is available at a glance.

Applied to any size belt conveyor, either horizontal or inclined. The weightometer gives a simplified and dependable record of your production, without interrupting the flow of fuel.

Write for Bulletin 373

MERRICK SCALE MFG. CO.

PASSAIC,
N. J.



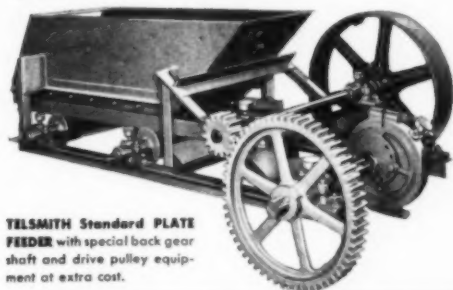
TELSMITH
HEAVY-DUTY
APRON FEEDER

TELSMITH

more economical feeders



MARMET COAL CO., MARMET, WEST VIRGINIA—36-in. x 6-ft. TelSmith Standard-Duty Plate Feeder delivers 200 tons hourly of mine run coal.



TELSMITH Standard PLATE FEEDER with special back gear shaft and drive pulley equipment at extra cost.

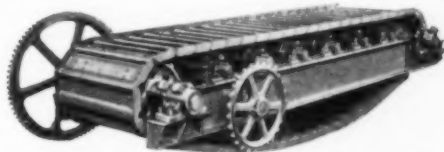
● Keep your conveyors, screens and crushers working smoothly and at full capacity. TelSmith Apron or Plate Feeders insure steady, uniformly regulated flow of material to entire plant—boost your output and cut cost of up-keep.

APRON FEEDERS are self-contained units on heavy structural steel frames. **Heavy-Duty Apron Feeders**—with carbon, or manganese steel flights—handle the toughest jobs, such as feeding primary crushers, either jaw or gyratory. **Standard-Duty Apron Feeders**—equally sturdy, but weigh less. Apron Feeders are made in 24-in. to 72-in. widths, with capacities from 25 to 700 tons per hour. Furnished with heavy steel hoppers, at extra cost.

PLATE FEEDERS are simple in design—sturdy in construction. Adjustable stroke regulates capacity. Made in both Standard and Heavy-Duty models; widths 16-in. to 48-in.; capacities 12 to 400 cu. yds. per hr.

Send for Bulletin F-66


F-1.



TELSMITH Standard-Duty APRON FEEDER—Raised edges of its 3/8-in. steel flights prevent spillage.

SMITH ENGINEERING WORKS, 516 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

51 East 42nd St. New York 17, N. Y.	211 W. Wacker Drive Chicago 6, Ill.	713 Commercial Trust Bldg. Philadelphia 2, Pa.	Cable Address: Sengworks, Milwaukee 238 Main Street Cambridge 42, Mass.	2616 Euclid Ave. Cleveland 3, Ohio	920 E. McMillan St. Cincinnati 6, Ohio
Brandels M. & S. Co., Inc. Louisville 8, Ky.		Rish Equipment Co. Charleston 22, & Clarksburg, W. Va.	Rish Equipment Co. Roanoke 7, & Richmond 10, Va.		Tractor & Eqt. Co., Inc. Birmingham 1, Ala.



**MINING
COAL
at
LESS
Cost per Ton
is
possible!**

through
Effective
**WORKMEN'S
COMPENSATION**

Yes, lower mining costs are often a direct result of Coal Operators Casualty Company's **EFFECTIVE Workmen's Compensation Insurance** which provides...

● **ENGINEERING SERVICE**

To aid in reducing accidents and increasing production efficiency.

● **PROMPT CLAIMS SERVICE**

Service that lessens litigations and provides quick, ample claims payment which aids harmonious labor relations.

**Reduced accident frequency,
more productive man-hours,
mean COAL MINED AT LESS
COST PER TON.**



**COAL OPERATORS
CASUALTY COMPANY**
Greensburg, Penna.

visor of mining equipment. E. J. McIlvaine has been named a junior salesman in the vibratory material-handling division of the St. Louis office. John C. Mitchell has taken over power-tool sales in the Boston office. A. C. Staley Jr. has been appointed a junior salesman in the vibratory material-handling division and F. J. Kirby Jr. in charge of power-tool sales in the Cleveland office. The Philadelphia branch sales office has moved to larger, more centrally located quarters at 1018-20 West Lehigh Ave., Philadelphia 33, Pa. The Kansas City, Mo., office has been moved and is now located in the Wirthman Building, 31st at Troost Ave.

Quaker Rubber Corp., Philadelphia, has named John R. Lewis manager of its District No. 2, which includes Pennsylvania, Maryland, Delaware, Virginia, Tennessee, North Carolina, South Carolina, Georgia, Florida and Alabama. Mr. Lewis has served Quaker in both production and sales and most recently was assistant to G. C. Johnson, general sales manager.

Air Reduction Co., New York, has named Dr. G. V. Slottman director of research and engineering. Dr. Slottman, who joined Air Reduction in 1934, formerly was technical assistant to the vice president in charge of sales.

Gar Wood Industries, Inc., Wayne, Mich., has named Edward B. Hill, formerly general sales manager, vice president in charge of sales. Mr. Hill, who has been associated with the company since 1926, was manager of the Chicago district until his appointment as general sales manager in 1947. Gar Wood has appointed Whiteo Truck Equipment Co., 930 Mason St., Louisville, Ky., an authorized distributor. A fully equipped service department for Gar Wood products will be maintained by the company.

I-T-E Circuit Breaker Co. and Railway & Industrial Engineering Co., its subsidiary, Philadelphia, have established a branch office at Wilkes-Barre, Pa., under the direction of Lee S. Spaulding. Mr. Spaulding, who formerly represented I-T-E in the Wilkes-Barre area, will handle the application and sales of the complete industrial lines of both companies.

International Harvester Co., Chicago, has announced the division of its eastern sales region, motor-truck division, into two regions, the eastern and east-central. The new eastern region—Albany, Boston, New York, Philadelphia and West Haven—operate 29 company-owned sales and service branches. The newly created east-central region includes district headquarters at Baltimore, Buffalo, Cleveland, Columbus, Harrisburg, Pittsburgh and Syracuse and 26 company-owned sales and service

**See You At
BOOTHS 1459-1461
Cleveland Coal Show
May 9-12**

Plat-O
Coal
Washing
Tables

Deister
Vibrating
Screens



A STAR Performer
featuring
75%
Savings
in Jack
Setting
Time
plus



- ★ 35% to 50% lighter weight
- ★ 5 1/2 times faster
- ★ Safety hand wheel
- ★ Non-corrosive, rustproof

3 types of heads
3 types of bases
Various heights

Star Jack Co.
ELMWOOD PARK
CHICAGO 35, ILL.

Write for Literature



with 4 Wheel Drive!

The Model HM Payloader is a profitable new tractor shovel for both open pit and underground mines. Its large pneumatic tires permit operation on coal veins without chopping and grinding the coal. It will dig, load, bulldoze, grade, carry, lift and push.

This big, powerful, 1½ yd. Payloader has tremendous digging power and ground-gripping traction for tough going in rock, sand, muck or *any* terrain. Four-wheel drive on large rubber tires provides traction comparable to a crawler tractor—plus more speed, greater mobility and *far less maintenance expense.*

It has power-booster steering, four forward speeds up to 16 mph, four reverse speeds and quick-acting forward-reverse control combined for easy operation and fast maneuvering. It has double-acting hydraulic rams that raise, lower, dump and close the bucket. Get the complete story on this efficient, new Payloader from The Frank G. Hough Co., 735 Sunnyside Ave., Libertyville, Ill.

CLEANS TOPS OF VEINS
FEEDS STRIPPING SHOVELS
LOADS TRUCKS
MAINTAINS ROADS
MOVES TOOLS AND SUPPLIES
LIFTS, PUSHES, CARRIES

WRITE for full information on any size of Payloader: the 1½ yd. Model HM; the 1¼ yd. Model HL; the ¾ yd. Model HF; the 10½ cu. ft. Model HA.



HOUGH PAYLOADER

Manufactured by THE FRANK G. HOUGH CO.





Carlon E Synthetic Flexible PIPE

**Proves amazingly durable
under severe tests**

For many months one of the country's largest coal companies has been making practical tests of Carlon E Pipe in several of its mines. Here are the reports:

Mine A—400 ft. of Carlon E Pipe in service 6 months shows no signs of wear or effects from acid mine water.

Mine B—200 ft. of Carlon E Pipe in service 8 months—same report and superintendent estimates that if iron pipe had been used in this section it would have been necessary to replace 4 or 5 times.

Mine C—Has 5200 ft. of Carlon E Pipe in use of which 1600 ft. has given unflinching service for 10 months. Several weeks ago 6 men installed 2 pumps and 3000 ft. of Carlon E Pipe in one day. Labor cost \$84.30. Estimated labor cost for ordinary black pipe, \$262.90. Quick installation of Carlon E Pipe also saved production from being cut in half by sudden water.

Write for quantity prices and
further information

CARTER
PRODUCTS CORPORATION
10225 MEECH AVE. • CLEVELAND 3, O.

branches. J. T. Sullivan will continue as manager of the new eastern region, and L. A. Hanson, formerly supervisor of parts and service merchandising, motor-truck division, has been appointed manager of the east-central region. J. C. Bulleit, assistant manager of education and training, has been named to succeed Mr. Hanson. The division also has appointed C. L. Sears district manager at Columbus, Ohio. B. H. Crawford has been transferred to Pittsburgh as assistant district manager, and J. S. Turner has been transferred to Kansas City as assistant district manager, replacing Mr. Crawford.

Mines Equipment Co., St. Louis, Mo., reports the installation of a "fluoroscope machine" in its final testing line for electrical connectors in a move designed to insure perfection in the construction and service of the units. After passing rigid mechanical and electrical tests, the company says, each molded-Neoprene connector or receptacle is subjected to final inspection that "looks inside" to provide a positive check of correctness of wire lay, insulation thickness and soldering performance.

Hercules Powder Co., Wilmington, Del., has appointed Arthur B. Austin manager of its Joplin, Mo., explosives office, succeeding M. W. Latimer, deceased. Mr. Austin, who has been assistant manager of the Chicago office since 1947, was formerly on the technical service staff of the Joplin office for four years.

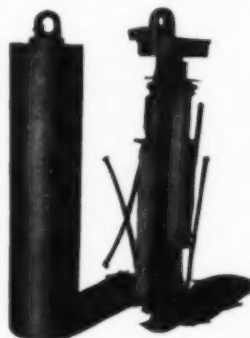
U. S. Steel Supply Co., Chicago, has appointed Eugene G. Sheasby general staff manager, general sales division. Associated with the company since December, 1946, Mr. Sheasby has been manager of the market-development division for the past year. Russell J. Skinner has been appointed assistant district manager of the company's St. Louis, Mo., office.

Lebanon Steel Foundry, Lebanon, Pa., has completed a \$500,000 plant-expansion program that reportedly will double the company's high-alloy steel-casting facilities. The new plant addition and equipment installations are specially designed for the production of super-alloy castings under secret processes developed by Firth-Vickers Stainless Steels, Ltd., Sheffield, England.

Pennsylvania Refining Co., Cleveland, has appointed Starr Co., Inc., Petersburg, Va., a sales representative for Penn Drake Gumont in Virginia and North Carolina.

Caterpillar Tractor Co., Peoria, Ill., has announced that a new parts depot to facilitate parts shipments to Caterpillar dealers and customers is under construction in Indianapolis, Ind., and will be ready for occupancy this summer. The new \$150,000 structure will serve Caterpillar dis-

SHUTTLE CAR RESISTORS



Illustrated, GUYAN replacement elements for permissible shuttle-car traction motors . . . fits in original case and mountings. Resistor available for all type shuttle car traction and reel motors.

GUYAN Try us for long-lived,
trouble-free resistors.
MACHINERY COMPANY
LOGAN, WEST VIRGINIA

Four

**REASONS
WHY
YOU SHOULD
SELECT**



**WEDGE-WIRE
PREPARATION
SCREENS**

The cross-section above shows how KLEENZLOT screens operate on a non-clogging, non-blinding principle.

- 1** A preparation screen designed for maximum time and labor saving production.
- 2** Sturdily and accurately constructed for long-life and screening accuracy.
- 3** We produce screens in a complete assortment of high-grade metals — mild and stainless steel, bronze, brass, monel, copper, nickel, aluminum, silicon bronze.
- 4** We maintain a capable engineering staff to aid you in the proper recommendations for your specific problems.

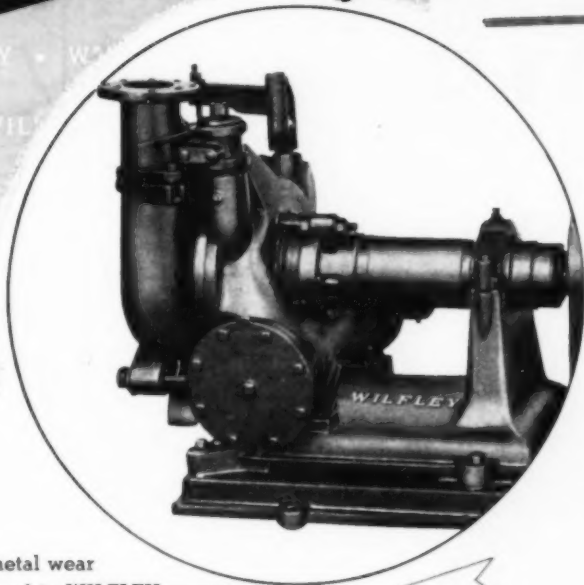
SEND FOR OUR ILLUSTRATED CATALOG

Wedge-Wire
CORPORATION
5802 CLARK AVE CLEVELAND 2, OHIO

WILFLEY

RUBBER PARTS..

Available



Rubber parts,

interchangeable with metal wear parts, are extensively used in WILFLEY pumps all over the world. This is another WILFLEY feature—among many tested improvements which produce ever-increasing efficiency and reliability reflected in stepped-up production and worthwhile power savings. In addition to rubber, wear parts are made of electric furnace iron and other materials individually engineered for cost-saving efficiency on your job. An economical pump size for every purpose. Write or wire for specific information that will help reduce YOUR costs.

A Companion
to the Famous WILFLEY
Acid Pump

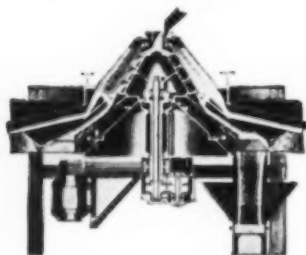
Buy WILFLEY for
Cost Saving Performance

WILFLEY
centrifugal PUMPS

A. R. WILFLEY & SONS, INC.
DENVER, COLORADO, U.S.A.
New York Office: 1775 Broadway, New York City

the **C-M-I** centrifugal **DRYER**

dewaters and dries the smaller sizes of coal better and more economically than can be done by any other method. Records of many leading preparation plants that dry many million tons of fine coal every year prove that the performance of "C-M-I" dryers is outstanding.



Our engineering staff is prepared to give you details of the many installations in operation and to make recommendations for your drying problem based upon actual results obtained by operators of "C-M-I" machines.

**CENTRIFUGAL
AND MECHANICAL
INDUSTRIES, INC.**

**146 PRESIDENT ST.
ST. LOUIS 18, MO.**

tributors in Indiana, Illinois, Wisconsin, Michigan, Iowa, Missouri, Kentucky, Ohio, Tennessee, Pennsylvania, West Virginia, Virginia and Maryland, in addition to Ontario and Quebec, Canada.

Trade Literature Available Without Charge on Request to the Manufacturer

INDUSTRIAL EQUIPMENT — Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. 1948 Annual Review of engineering developments at Allis-Chalmers is an illustrated summary of the company's development of equipment and research in the various fields of its activity, including power generation and distribution, coal mining and a number of other industries.

COAL PREPARATION — Humphreys Investment Co., First National Bank Bldg., Denver 2, Colo. Bulletin 7 is a reprint of the paper given at the February, 1948, A.I.M.E. New York meeting by W. L. Dennen and V. H. Wilson, The Hudson Coal Co., entitled "Cleaning Anthracite Silt for Boiler Fuel With Humphreys Spiral Separator."

STORAGE-BATTERY MAINTENANCE — Gould Storage Battery Corp., Trenton 7, N. J. New pocket-size handbook of instructions and engineering data on the care of motive-power batteries for battery users and maintenance men is divided into four sections: Care and Operation; Maintenance and Repair; Parts; and Technical Data. The illustrated booklet provides detailed information on battery care and operation and includes four charts tabulating battery-charger ampere-hour-meter settings required to give a battery the correct charge and four charts of battery capacities in terms of ampere-hours, amperes and kilowatt-hours at both the 6-hour and 8-hour discharge rates.

SCALES — Howe Scale Co., Rutland, Vt. Bulletin 666 illustrates and describes the Howe line of dial scales for various industrial uses. The bulletin emphasizes the exclusive Howe Tape-Drive Dial feature of "No Rack—No Pinion," said to offer increased weighing accuracy, sensitivity and long life.

MULTI-FUEL ENGINES — International Harvester Co., 150 North Michigan Ave., Chicago 1, Bulletin A-164-MM, "International Carbureted-Type Engines and Power Units," offers details and illustrations of International industrial engines and equipment for their operation on gasoline, kerosene, distillate or natural gas in a wide variety of applications. The units are available as stripped engines or with job-determined equipment combinations. Maximum working-horsepower ratings range from 24 to 55 for complete power units when operating on gasoline.

EARTHMOVER — The Frank G. Hough Co., 735 Sunnyside Ave., Libertyville, Ill. Catalog on the new four-wheel-drive Model HM Payloader contains complete specifications on the 1½-cu. yd. tractor shovel, features and numerous action views on a variety of jobs.

BELT-CONVEYOR IDLERS — Robins Conveyors Division, Hewitt-Robins, Inc., Passaic, N. J. Bulletin 120-A1 illustrates and describes Robins troughing and return idlers for belt conveyors and covers design, features, construction and sizes. Bulletin 120-I lists and illustrates replacement parts for Robins idlers, with their identifying number.

WIRE CLOTH — Korb-Pettit Wire Fabrics & Iron Works, Inc., 1505-15 North Mascher St., Philadelphia 22. Handbook No. 36 contains specifications and illustrations of industrial wire cloth and woven-wire screens, including square-

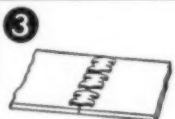
How Easy, Now, to Join and Repair Belts!



A hammer ... block of soft wood ... Bristol's Belt Lacing. Hammer fastener through belt.



Using wood block as a back-up, flatten the projecting prongs.

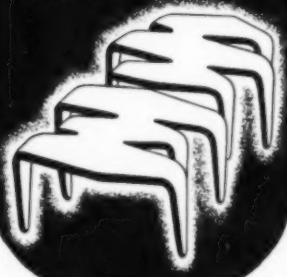


Perfect job! Ends securely joined ... tears repaired!

Keep these fasteners handy for quick, strong, permanent repairs.

Order from your distributor
THE BRISTOL COMPANY
Mill Supply Division
139 Bristol Road, Waterbury 91, Conn.

BRISTOL'S BELT LACING



How does your weight of **MINE TELEPHONE CABLE** compare with this?...

Take a minute to interpret the benefits you can gain from a drastic weight reduction in your mine telephone cable. How much you can save by changing to Ankoseal Telephone Cable is shown in the following comparative table:

Comparison of 26 pair—No. 22			
	Ankoseal (armored type)	Paper- Lead	Rubber plus Neoprene
Weight per 1,000 ft.	355 pounds	708 pounds	442 pounds
Weight saving with Ansonia Ankoseal		353 lbs. or 49.9%	87 lbs. or 19.7%

You will note that the comparison above is based on *armored* Ankoseal Cable. If you use unarmored mine telephone cable, the weight reduction is even greater. ANSONIA can furnish either type according to your requirements.

Besides this impressive weight-saving, Ankoseal is ideal for mine service in all other respects. It provides high resistance to moisture, oil, mine water acids and all other natural enemies of ordinary cable jacketing.

We'll gladly estimate the benefits of Ankoseal Mine Telephone Cable in your particular case, if you write us about your needs.



THE ANSONIA ELECTRICAL COMPANY

SUBSIDIARY OF NOMA ELECTRIC CORPORATION

ANSONIA, CONNECTICUT

opening space screens, types of weaves, and crimps and hooked edges available—double-crimp, square-mesh, market-grade and extra-fine wire cloth.

STEEL BUILDINGS—Economy Co., Inc., 49 Vanderbilt Ave., New York 17, Bulletin describes "packaged" factory-new steel buildings fabricated and delivered for speedy erection in any size desired. Construction, features and simplicity of erection are covered. Bulletin also lists details of new and used overhead cranes, electrical units, shovels and draglines and other equipment available from Economy.

MAGNETIC PULLEYS—Stearns Magnetic Mfg. Co., Milwaukee 4, Wis. Bulletin 350 describes the new line of Stearns permanent magnetic pulleys and covers features, illustrations, specifications, dimensions, capacities and typical applications.

WIRE-ROPE FITTINGS—Thomas Laughlin Co., Portland, Me. Catalog of industrial and marine fittings for its complete line of drop-forged wire-rope and chain fittings includes details of new fittings, new data and tables and charts,

including several strength and dimensions tables, and prices.

SPEED REDUCERS—Farrel-Birmingham Co., Inc., Buffalo 7, N. Y. Bulletin 119 contains complete information on the company's line of speed reducers offered in a wider range of sizes and capacities. In addition to directions for properly selecting speed reducers, the booklet includes descriptions of units of the single- and double-reduction types, specifications, horse-power-rating tables, overhung load capacities, dimensions and weights.

EARTHMOVER—R. G. LeTourneau, Inc., Peoria, Ill. Bulletin TP-167 offers information on the new electric-control 150-hp. 16-ton-capacity C Tournapull. The bulletin includes data on design features and specifications and is illustrated with action pictures showing the Tournapull working under a variety of conditions.

SPEED CHANGERS—Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. Bulletin 2916613-C details construction, features and operation of "Vari-Pitch" speed changers and includes data on speed range, a selection table of recommended

unit size for standard motors, general dimensions of pilot-motor arrangements and arrangement diagrams.

STEEL MESH—Joseph T. Ryerson & Son, Inc., Box 8006-A, Chicago 80. Bulletin offers engineering data, including load deflection, air-flow comparison and free openings, on both standard and flat-tensioned types of expanded steel. Also included is list of sizes with dimensions and weights, illustrations of mesh and typical applications and data on "Expanded Metal" grating.

DUST COLLECTORS—W. W. Sly Mfg. Co., 4700 Train Ave., Cleveland 2, Ohio. Bulletin D-491 contains illustrations of various installations of Sly dust filters for collection and disposal of various dusts.

FIRE FIGHTING—Carbide & Carbon Chemicals Corp., 30 East 42nd St., New York 17. "Fire-Fighting with Wetter Water," a new 20-minute 16-mm. sound movie in color is available for showings to municipal, volunteer and industrial firemen or groups interested in fire fighting and prevention. The movie illustrates with various types of fire tests how water made wetter by the company's new product, "Unox" fire-fighting penetrant, knocks out fires three to four times faster than plain water.

INDICATORS—Auth Electric Co., 34-20 45th St., Long Island City, N. Y. Bulletin 120 describes in detail the operation, construction and features of Auth supervisory annunciators, designed to provide with one unit visible and audible alarms in case of failure of services, equipment or machines at various locations.

STEEL—Jessop Steel Co., Washington, Pa. Catalog covering Jessop high-speed steels describes the analyses, heat treatments, and applications of five most commonly used types. Charts showing the hardness values after heat treatment are included.

LUBRICATING-OIL TESTING—Gerin Corp., Red Bank, N. J. Bulletin 360, "Required Equipment for Lubrication Control," illustrates the recently announced portable oil-inspection kit with which any mechanic reportedly can quickly measure the contaminants occurring in lubricating oil during use and explains the simplified, accurate methods used.

COMPRESSORS—White-Roth Machine Corp., Lorain, Ohio. Bulletin F-2000 on Lorain single-stage and two-stage compressors designed for operation on diesel oil, natural gas or butane provides detailed specifications, over-all dimensions and shipping weights.

RUST-PREVENTATIVE PAINT—Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio. Bulletin 1602-A describes "Rust-rem" anti-rust paint, which reportedly can be applied over rust without wire brushing, scraping or sand-blasting to penetrate the rust layer and render it inactive. Other products covered are "Heat-rem," heat-resisting aluminum paint; "Chem-Rem," chemical-resistant black paint; and "Wood-Rem," wood-preservative paint.

HOLE SAWS—Misenor Mfg. Co., Syracuse 2, N. Y. Bulletin provides details and prices for the complete line of Misenor hole saws, replacement blades and parts, including a new line of "Speedex" high-speed hole saws and replacement blades and the "Hole-Master" multiple blade hole saws in which a single tool head acts as the holder for from four to eleven different sizes of rotary saw blades.

VENTILATION SHUTTERS—L. J. Wing Mfg. Co., New York 11. Bulletin illustrates Wing self-closing, manually-operated and motor-operated shutters and the wing penthouse, with details of construction and dimensions.

STAINLESS-STEEL WELDING—Lincoln Electric Co., Cleveland 1, Ohio. Bulletin 461 contains detailed information on the properties, use and application of various Lincoln electrodes designed for stainless-steel welding.

PROFESSIONAL SERVICES

ALLEN & GARCIA CO.

ENGINEERS AND BUILDERS OF
MODERN COAL OPERATION

Authoritative Valuations, and Reports of
Mining Properties, Equipment, and Operation.

332 N. Michigan Ave., Chicago
120 Wall Street, New York, N. Y.

P. R. PAULICK

Consulting Mining Engineer

Design - - - - - Modern Mining Methods
S. - - - - - Mine Mechanization Systems
Application - - - - - Coal Analysis
Domestic and Foreign Work

South Park Road Library, Pa.

F. CARL COLCORD

CONSULTING ENGINEER

COAL LAND VALUATIONS
MINE INSTALLATIONS AND
OPERATION

BOX 268, PARIS, KY. Phone 3271V

PIERCE MANAGEMENT, INC.

MINING ENGINEERS

A Background of 22 Years of Design, Consulting,
and Management Service in Coal and Mineral In-
dustries in 28 States and 18 Foreign Countries.
8 Station Electric Bldg. Scranton 2, Pa.

EAVENSON & AUCHMUTY

Mining Engineers

COAL OPERATION CONSULTANTS
VALUATION

2730 Koppers Bldg. Pittsburgh 19, Pa.

K. PRINS & ASSOCIATES

Engineers and Consultants

Designers of low cost coal preparation plants,
Tipples and structures.

THE PRINS COAL WASHER

Wellston Ohio

HENRY O. ERB

Coal Preparation Consultant

PLANT DESIGN AND OPERATION

1018 So. 8th St. Terre Haute, Ind.

TEMPLETON-MATTHEWS CORPORATION

Designing Engineers—Consultants—Builders

MODERN COAL PREPARATION PLANTS THRU
"CO-OPERATIVE ENGINEERING"
906 05 Spawmire Bldg. Terre Haute, Indiana

J. H. FLETCHER

30 Years
Continuous Consulting Service
to Coal Mines

Telephone Herriam 9151
McCormick Building Chicago, Illinois

J. W. WOOMER & ASSOCIATES

Consulting Mining Engineers

Modern Mining Systems and Designs
Foreign and Domestic Mining Reports
National Bank Building Wheeling, W. Va.

HERBERT S. LITTLEWOOD

CONSULTING ENGINEER

Application - Supervision of Installation
Maintenance - Inspection - Testing

POWER-HAULAGE-HOISTING-VENTILATION
1104 South Braddock Avenue, Pittsburgh 18, Pa.

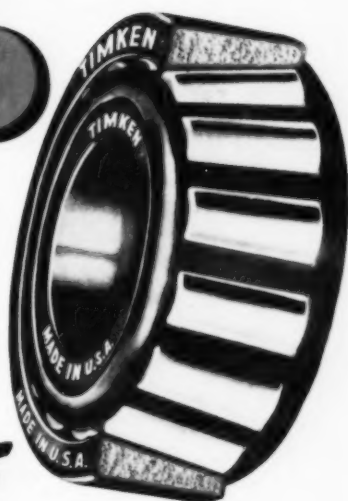
Consult these SPECIALISTS

Let them save your time by bringing
their broad experience in their specialty
to bear on your problems.

89%

OF THE EXHIBITORS AT THE
COAL SHOW WHO USE BEARINGS
IN THE EQUIPMENT THEY
MANUFACTURE

USE



These Timken bearing users include manufacturers of practically every kind of mechanical equipment used in the coal industry — mine cars, mine locomotives, belt conveyors, aerial tramways, mining machines, loading machines, shuttle cars, hoists and tippie equipment.

More Timken bearings are used in mine cars than any other bearings. More than half a million mine cars equipped with Timken tapered roller bearings already have gone into service and the figure constantly is growing.

Because of their tapered design, Timken bearings carry radial, thrust and combined loads. Because of their precision manufacture they provide smooth, power-economizing operation and because they are made of Timken fine alloy steel they stand up and deliver lasting service with characteristically low cost for operation and maintenance.

Make sure you have them in the equipment you buy or build. Look for the trade-mark "TIMKEN" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".

TIMKEN®
TAPERED ROLLER
BEARINGS

SEE US AT THE
COAL SHOW
SPACE No. A-400

TIMKEN
TRADE MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

GIANT
Gelatins

ATLAS
Gelodyns

ATLAS
Gelatin

ATLAS
Apex

ATLAS
Coalite

ATLAS
Amodyns


ATLAS
Extra Dynamite

MANASITE

ROCKMASTER
Detonators

These ATLAS Products
Make Possible The

ROCKMASTER
Blasting System



That Holds Down
Blasting Costs!

Equipment, explosives, blasting supplies, labor and drilling costs are up these days! But on many a blasting job, over-all costs are being held down by ROCKMASTER—the original milli-second delay blasting system pioneered by Atlas. ROCKMASTER, geared with the right explosive, makes possible outstanding savings through improvements in fragmentation and control of throw . . . and greatly decreased noise and vibration. This adds up to lower *over-all* costs!

ROCKMASTER is designed to "fit like a glove" these other Atlas developments that have made Atlas a leader in the field of explosives. Your Atlas representatives will be glad to show you how to make the most of ROCKMASTER advantages.

See us
Booth 400
Coal Exposition

Rockmaster, Manasite, Gelodyn, Amodyn, Apex, Coalite—Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco



**ALUMINUM
IS LIGHT**

**ALUMINUM
IS STRONG**

**Are these facts Cutting
Your Costs—or Someone Else's?**

The day has come when your jacks and other mining equipment will be measured against a new kind—made of Alcoa Aluminum. They will be strong, light, lasting, and easy to handle.

When you use equipment made of Alcoa Aluminum, you know that it is backed by sixty years' knowledge of alloys, of fabricating methods, of thousands of test results.

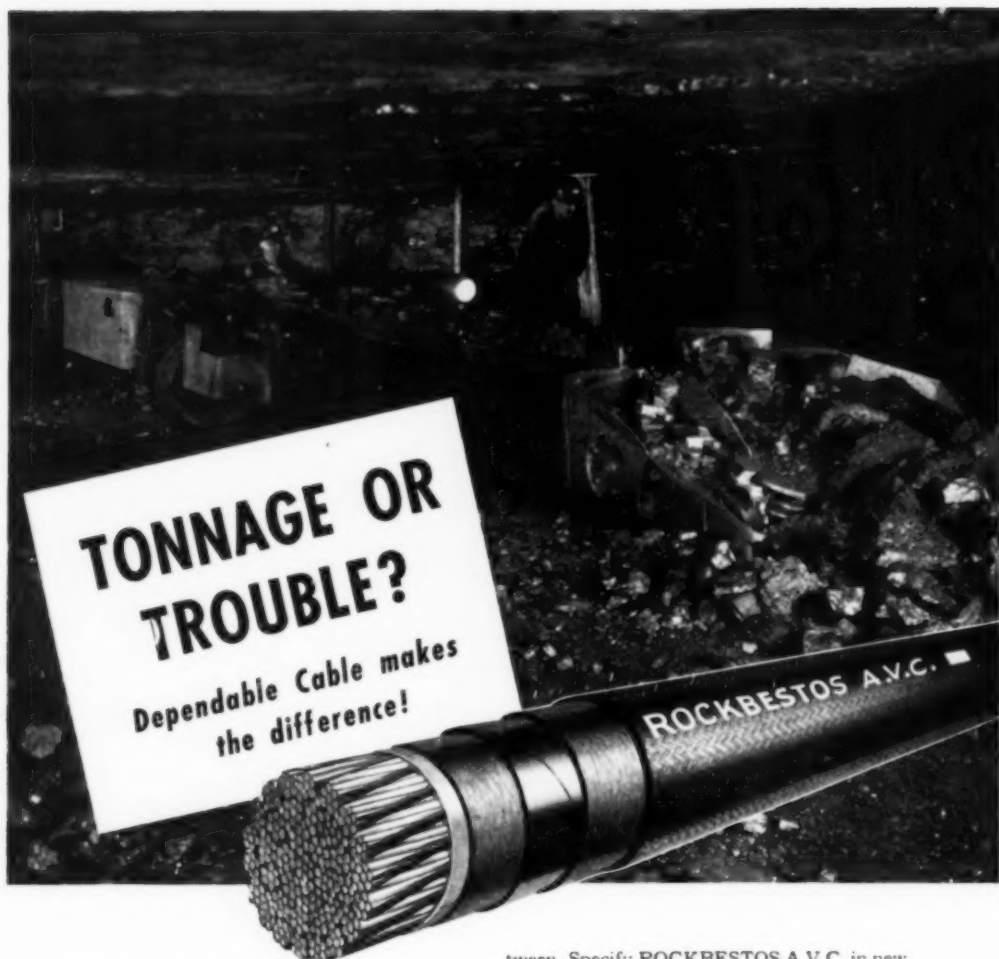
If you have an idea for new equipment in aluminum, Alcoa stands ready to help you with sixty years of experience. Write for "Alcoa Aluminum and Its Alloys", or call the Alcoa sales office nearest you. ALUMINUM COMPANY OF AMERICA, 1763 Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA FIRST IN ALUMINUM

ROD • SHEET & PLATE • SHAPES ROLLED & EXTRUDED • WIRE • RIB • BAR • TUBING • PIPE • SAND DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS





There is no more grueling test for cable than mining.

That's why this new type conveyor-loader—the Jeffrey 61 CLR—and the products of other pace-setting makers are coming through with ROCKBESTOS A.V.C. internal wiring as standard equipment.

Insulated with impregnated felted asbestos, ROCKBESTOS A.V.C. can't burn... resists moisture... stands up under heat caused by overloads.

Every hour a machine is down costs you 60 minutes of production you can never make up. Keep those outages fewer and farther be-

tween. Specify ROCKBESTOS A.V.C. in new equipment and for rewiring old equipment.

Get top tonnage—ask for ROCKBESTOS by name.

ROCKBESTOS PRODUCTS CORPORATION

NEW HAVEN 4, CONNECTICUT

NEW YORK CLEVELAND DETROIT CHICAGO
PITTSBURGH ST. LOUIS LOS ANGELES OAKLAND, CALIF.



WIRES and CABLES by

ROCKBESTOS

....dare to be better

ORDER FROM THESE JOBBERS—SPECIFY "ROCKBESTOS A.V.C."

BECKLEY, W. VA.: National Mine Service Co.
BIRMINGHAM, ALA.: Moore-Handley Edeco. Co.
BLUEFIELD, W. VA.: Superior-Sterling Co.
CHARLESTON, W. VA.: Charleston Elec. Supply Co.
CLARKSBURG, W. VA.: Westinghouse Electric Supply Co.
CLEVELAND, OHIO: Upson-Walton Co.

EVANSVILLE, IND.: Evansville Elec. & Mfg. Co.
FAIRMONT, W. VA.: Fairmont Supply Co.
HUNTINGTON, W. VA.: Banks-Miller Supply Co.
JENKINS, KY.: National Mine Service Co.
LOGAN, W. VA.: National Mine Service Co.
LOTHAIR, KY.: Mine Service Co.
MIDDLESBORO, KY.: Rogan & Rogan Co.

PITTSBURGH, PA.: Upson-Walton Co.
Pittsburgh, PA.: Westinghouse Elec. Supply Co.
SCRANTON, PA.: Penn. Elec. Engineering Co.
WHEELING, W. VA.: Westinghouse Elec. Supply Co.
WASHINGTON, PA.: Fairmont Supply Co.
WILLIAMSON, W. VA.: Williamson Supply Co.

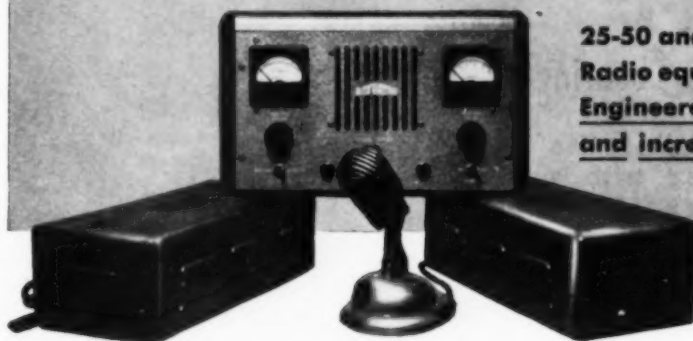
for dependable 2-Way radio communications it's...

RAYTHEON RADIOPHONE

Now It's Here!



VM 30-1—30 Watt Mobile Station, 25-50 Megacycle



25-50 and 152-162 Megacycle
Radio equipment that's
Engineered for dependability
and increased efficiency!

VS 50-1
50 Watt Fixed Station
25-50 Megacycle

UM 15-1—152-162 Megacycle (not illustrated)

COMPARE RAYTHEON'S ADVANTAGES!

NOISE-FREE RECEPTION
COMPACT • OUT OF SIGHT
SIMPLIFIED INSTALLATION

COMPARE RAYTHEON'S PERFORMANCE!

LOW BATTERY DRAIN
LOW MAINTENANCE • LONG LIFE

COMPARE RAYTHEON'S PRICE!

LOWEST PRICE IN THE INDUSTRY!
WRITE FOR QUOTATIONS AND
SPECIFICATIONS

Our sales engineers will assist you in
filing your FCC construction permit at
no cost or obligation to you!

SEND IN THIS COUPON TODAY!

Belmont Radio Corporation
5945 West Dickens Avenue, Chicago 39, Illinois
I'd like to have full information and literature on the new
2-way Raytheon Radiophone.

Name
Company
Address
City State



BELMONT RADIO CORPORATION

A Subsidiary of Raytheon Manufacturing Company
5945 West Dickens Ave., Chicago 39, Illinois

Sold Exclusively in Canada by Canadian Marconi Company, Montreal



the **M-R-C**
"Synthe-Seal" bearing

A standard-dimension
ball bearing with a
removable synthetic
rubber seal impervious
to oils and greases

MARLIN-ROCKWELL CORPORATION

Jamestown, New York

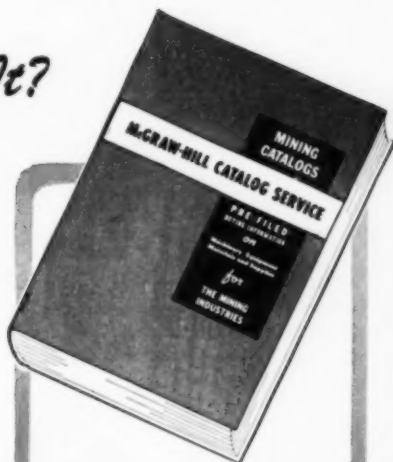
What Are The Specifications?

Who Makes It?

Where Can I Buy It?

... Here's the Mining Man's

ANSWER BOOK



MORE product data...
and **FASTER** than from
any other source!

This thirty-fourth annual edition of
MINING CATALOGS contains:

- 1 Over 500 pages of descriptions, specifications and illustrations of machinery, equipment and supplies essential to the mining and preparation of coal in:
 1. Anthracite Mines (Deep and Strip) Collieries and Breaker Plants.
 2. Bituminous Mines (Deep and Strip) Collieries, Preparation Plants and Tipples.
- 2 A comprehensive Classified Product Directory designed to cover all known manufacturers recognized as regular sources of supply for all phases of the Mining Industry, is included as a bound-in section of each volume of the **MINING CATALOGS**.
- 3 Company names of manufacturers who have catalogs pre-filed in the **MINING CATALOGS** are listed in the directory in prominent bold-face type, with a reference to the pages on which their product information may be found.

The **MINING CATALOGS** offer a bonanza of buying information to all men responsible for selection and purchase of the machinery, equipment and supplies required for the operation and maintenance of bituminous and anthracite coal mines all over the world.

Here you can find—in an easy and instantly accessible form—up-to-the-minute descriptions, specifications and illustrations of the products of leading manufacturers which are specifically applicable to all phases of coal mining activity... Here you get the **FACTS**—edited and arranged for maximum convenience—covering the data you need to make fast, intelligent selections of the equipment and supplies commonly used in the following coal mining and processing operations:

Transport of Men and Materials • Loading and Conveying of Product • Crushing and Sorting • Mine Drainage • Lighting and Ventilation • Weighing and Storage • Portable Power Generation • Mining Equipment Maintenance • Engineering and Administrative Functions.

If YOU are not now receiving the **MINING CATALOGS**

and are responsible for specifying or buying machinery, equipment or supplies for a mining operation, send a request on your company letterhead giving your full name and title. We will send you the current edition.

McGRAW-HILL CATALOG SERVICE
330 West 42nd St., New York 18, N.Y.

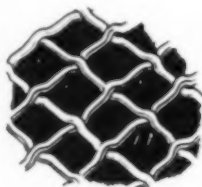
QUALITY PRODUCTS FOR THE MINING INDUSTRY



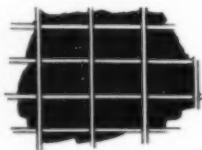
WICKWIRE ROPE

a type and size for every wire rope need; pre-formed and non-pre-formed. Our engineers will gladly give you information on Wickwire Ropes developed especially for mining uses.

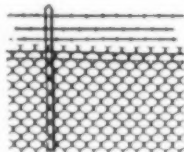
Calwico-Wissco Industrial Screens . . .
for sizing stoker coal.



Clinton Welded Wire Fabric . . .
for safety guards around machinery.



Realock Fence . . .
provides proper, permanent protection for industrial property.



Mine Rails and Fastenings . . . available only in Western States.



The Colorado Fuel and Iron Corporation

GENERAL OFFICES: DENVER, COLORADO
IN THE EAST: THE WICKWIRE SPENCER STEEL DIVISION, NEW YORK CITY, NEW YORK
ON THE PACIFIC COAST: THE CALIFORNIA WIRE CLOTH CORPORATION, OAKLAND, CALIFORNIA

Searchlight Can Help You!

HUNDREDS of miscellaneous business problems that confront you from time to time, can be quickly and easily solved through the use of the Searchlight Section of this or other McGraw-Hill publications.

The
SEARCHLIGHT
SECTION Classified Advertising
of McGraw-Hill
Publications

Can help you by bringing business needs of "opportunities" to the attention of other men associated in executive management, sales and responsible technical, engineering and operating capacities with the industries served by:

Air Transport
American Machinist
Aviation Week
Bus Transportation
Chemical Engineering
Coal Age
Construction Methods
Electrical Construction
& Maintenance
Electrical Merchandising
Electrical World
Electronics
Engineering and Mining
Journal
Engineering News-Record
E. & M. J. Markets
Factory Management and Maintenance
Food Industries
Operating Engineer
Power
Product Engineering
Textile World
Welding Engineer

The Searchlight Section is the classified advertising appearing in each of these papers. You can use it at small cost, to announce all kinds of business wants of interest to other men in the fields served by these publications. It is the regular meeting place of the man with a miscellaneous business need and the men who can fill that need.

When you want additional employees, want to buy or sell used or surplus equipment, want additional products to manufacture, seek additional capital, or have other miscellaneous business wants—advertise them in the Searchlight Section for quick, profitable results!

Classified Advertising Division

McGraw-Hill Publishing Co., Inc.
330 West 42nd Street New York 18, N. Y.

**SPEED
ACCURACY
MOBILITY**

Parmanco

**MECHANICAL FEED
HORIZONTAL DRILL.
WITH TRACTION DRIVE**

3000 LBS.
OF
MECHANICAL
DYNAMITE

Ten years of field test has proven that our power-feed design of direct transmission and worm gearing with two-speed control will not only cut shot hole drilling time in half but also eliminate costly maintenance delays. V-belt drive to the power-feed with an additional ample clutch in that assembly gives absolute control of a drilling speed of two to three feet per minute with a retrieving speed of twenty-four feet per minute.

The Parmanco Horizontal is adapted to all forms of high-wall drilling, will handle a six-inch auger up to a distance of sixty feet or more and, by use of our patented augers with interrupted flights and secondary cutters, will drill an absolutely clean hole with a minimum of torque. It permits the drilling of a controlled-angle hole which makes possible a great saving of explosives through the cantilever effect of this controlled-angle drilled hole.

**EFFICIENT STRIPPING STARTS WITH
EFFICIENT DRILLING**

PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS

Four O.K. ELECTRIC HOISTS Replace Two Locomotives - - -

**WILL PULL 10 TO 110 TON
LOADED CARS**

Equipped with a special gear drive that increases pulling power and decreases speed to a rate of, as little as, 16 ft. per minute, the F-50 is another outstanding O.K. development. So efficient and economical, that it has been estimated to pay for itself in one year of operation.

O.K. hoists are built to fit your specifications. We will gladly discuss any special problem—or supply you with information on the complete line of O.K. hoists, compressors or the portable elevator.



O.K. CLUTCH & MACHINERY CO.

Columbia, Pennsylvania, U. S. A.

OUR PRODUCTS HAVE BEEN GIVING SATISFACTION SINCE 1903

If there's dust
on it . . . it may be

Heavy Scrap

If it's

HEAVY SCRAP

it's needed to make *more steel!*



SCRAPPY SAYS:
*Search your plant
for HEAVY SCRAP
... Help make
MORE STEEL!*



One half of all the raw material used in steel plants (and foundries, too) is scrap.

Today, the scrap we're getting does not include enough *heavy* scrap. More heavy scrap is needed to produce better steel *faster*.

And what is heavy scrap?

Heavy scrap is three things:

1. the "left-overs" of iron and steel production, fabrication and machining.
2. junked autos and farm machinery.
3. obsolete iron and steel equipment in factories, such as old machinery, dies, jigs, fixtures, chain, etc.

But—the "left-overs" are not great enough today to fill the unprecedented demands for production.

And, with replacements scarce, less junked autos and farm machinery have entered the scrap supply line.

So — only by digging out all the

never-to-be-used odds and ends of broken, worn-out, and obsolete factory equipment . . . can the mills and foundries get all the heavy scrap they need—the type that makes better steel — and faster.

It's *your* job to do this.

Institute a steel scrap salvage program in your plant. Appoint one top official of your company to take full responsibility. Have him consult with your trade association's Scrap Drive Committee and local scrap dealers.

Do this now.

We do not have enough heavy scrap to take care of domestic needs and ERP . . . let alone an emergency reserve for national security.

More heavy scrap . . . one million tons of it . . . is the answer.



COAL AGE

"Sutton" SAND DRYING STOVES

The Standard for Over Forty Years

Burns Any Type of Fuel

The "Sutton" Sand Dryer may be fired with any type of fuel. While most "Sutton" Sand Dryers are equipped to burn coal, they can be furnished with burners for natural gas or fuel oil.



"SUTTON" FEATURES

- Simple in operation
- No skilled labor necessary
- Made in four sizes
- Lowest original cost
- Economical upkeep
- Topmost efficiency

SATISFACTION GUARANTEED

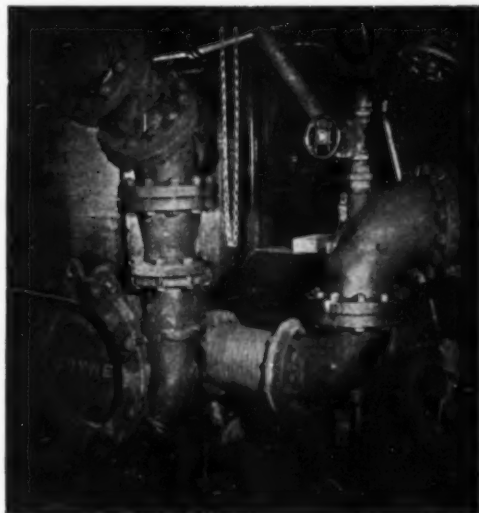
Catalog and Prices sent upon request

INDIANA FOUNDRY COMPANY

950 Oak Street

Indiana, Pa.

GOYNE PROCESS PUMPS



A Sand Pump is only a link in a chain in a coal washing plant, but it can be a strong link if it embodies the following features as does the Goyne.

1. Ease of inspection of all wearing parts. All internal portions are immediately accessible after removing only the rear head of the pump. No suction or discharge piping is disturbed.
2. The one packing box of the pump subjected only to suction pressure and is readily kept clean by a low pressure clear water line. Long packing and shaft sleeve life is assured.
3. Impeller clearance is adjusted while the pump is running, insuring constant pump capacity so essential for uniform washing.
4. There are twenty-eight possible nozzle assembly combinations for each standard pump. Washery designers like this "adaptability feature" as it helps them out of tight places and simplifies piping.
5. We carry the spare parts stock. Order your replacements when needed. Reduce your inventory by using Goyne Process Pumps.

All inquiries receive prompt and careful attention.

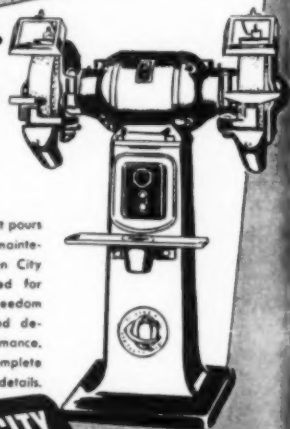
THE GOYNE STEAM PUMP CO.

ASHLAND, PA.

cut
tool
costs...

with rugged QUEEN CITY GRINDERS

It takes a top-quality grinder to stand up under the heavy work that pours through a mine maintenance shop. Queen City Grinders are noted for their durability, freedom from downtime and dependable performance. Send for catalog complete with prices and details.



**QUEEN CITY
MACHINE TOOL CO.**

241 E. 2nd St.
Cincinnati 2, Ohio

AGENTS IN PRINCIPAL CITIES

The greatest help a coal mining man can have—

IF YOU want to make sure of getting your certificate of competency—sure of winning a bigger job with bigger pay, get Beard's great books today and put them to work for you.

In these three books you have a practical, always-on-the-job guide that will help you solve the problems you face every day, show you what to do, tell you why it should be done.

Beard's

Mine Examination Questions and Answers

3 Volumes—\$8.25, Payable in Three Easy Installments

THESE books explain what a man must know in order to become a mine inspector, a mine foreman, assistant foreman, fireboss, hoisting engineer, safety engineer, shot-firer, etc.

They give you complete and authoritative information about air and gases, explosives, safety requirements and methods, mechanics, engines, hoisting, drainage, pumping, ventilation, timbering, instruments, and every other detail that the practical mining man must know.

Can you answer these questions—

What is meant by splitting the air current and what are the advantages derived from such methods?

Can a miner live in air in which the oxygen content is reduced to 17 per cent?

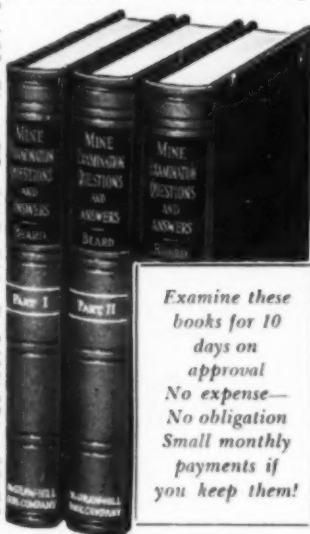
Name five duties imposed on mine foremen by law?

In what time can an engine of 40 effective hp. pump 4,000 cu. ft. of water from a shaft 350 feet deep?

What are the advantages and disadvantages of a gasoline pump, an air pump and an electrical pump?

What is the estimated tonnage per acre, per foot of thickness, for bituminous coal?

These are but a few of the more than 2,000 questions given in Beard's books together with full, correct answers. Hundreds of men have used this method to prepare for higher, better jobs. You can, too, if you have the Beard books and plan to use them systematically. They are the best investment that a mining man can make—not only as an aid for passing examinations but as practical reference volumes on everyday mining operation problems.



Examine these books for 10 days on approval
No expense—
No obligation
Small monthly payments if you keep them!

McGraw-Hill ON-APPROVAL COUPON

McGraw-Hill Book Co., Inc., 330 West 42nd St., New York
Send me, charges prepaid, Beard's Mine Examination Questions and Answers, 3 volumes, for 10 days' examination. If satisfactory I will pay \$8.25 at the rate of \$2.25 in ten days and \$3.00 per month. If not wanted I will return the three volumes postpaid.*
Name _____
Address _____
City _____ Zone _____ State _____
Company _____
Position _____
Note: We pay delivery charge if you send cash with coupon. Same return privilege.

PUMP PARTS

and REPAIRS



FLOOD CITY has manufactured and repaired pumps for coal mine use for over 20 years. Our experience has been that the adoption of a general purpose pump for coal mine use is generally unsatisfactory, and that many so called acid resisting bronzes are readily attacked by mine sulphur water. The same engineering ability and design experience is used in the repair and modernizing of all makes of pumps, so that generally an improvement in both efficiency and maintenance cost can be expected of a Flood City rebuilt pump. We have many patterns for all types of impellers so that these parts can be made up for changed conditions, at minimum cost.

Flood City Brass & Electric Co.
Messenger & Elder Sts., Johnstown, Pa.

Branch Office: 4 Virginia St. W., Charleston, W. Va.

Keep Fresh Air
On The

GO

WITH

Fulton Brattice Cloth

RAMMUS FIREPROOF

With Fulton's 79 years of experience in producing industrial fabrics behind it, fire-resistant, mildew-, fungus-, and rot-resistant Fulton Brattice Cloth is the dependable brattice cloth for long-lasting, economical service.

Top-quality jute in standard and heavy weight make every yard of Fulton Brattice uniform and dependable. Widths from 36 to 96 inches, easy-to-handle, uniform 50-yard rolls with a special, sturdy cloth marker showing full specifications.

Ready for immediate shipment through your mine supply house or from your nearest Fulton branch.

Fulton

BAG & COTTON MILLS
New Orleans • St. Louis • Denver
New York • Dallas • Minneapolis
Atlanta • Kansas City (Kansas)
Los Angeles



FLEXCO **HD** **BELT** **FASTENERS** **AND** **RIP PLATES**

**FOR HEAVY
CONVEYOR
AND ELEVATOR
BELTS OF
ANY WIDTH**

Flexco HD Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

Flexco Rip Plates are for repairing and patching damaged belts.

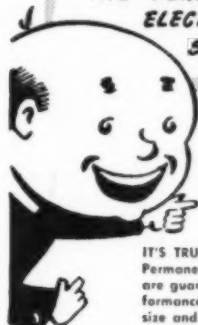
Ask for Bulletin F-100

FLEXIBLE STEEL LACING COMPANY
4638 Lexington St., Chicago 44, Illinois



**Strong, Smooth and
Readily Traughing.
Order From Your
Supply House**

AT LAST...
A "NON-ELECTRIC" MAGNETIC
SEPARATOR PULLEY GUARAN-
TEED TO EQUAL OR EXCEED
THE PERFORMANCE OF AN
ELECTRO MAGNETIC
SEPARATOR PULLEY



IT'S TRUE . . . ONLY HOMER HEAVY-DUTY Permanent "non-electric" Magnetic Pulleys are guaranteed to equal or exceed the performance of electro magnetic pulleys of some size and capacity.

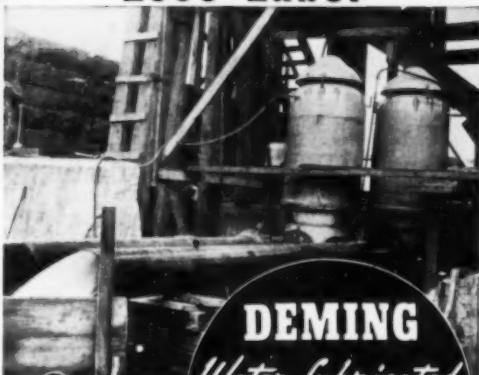
HOMER Heavy-Duty Pulleys available in standard diameters from 12" to 30", with belt widths from 4" to 60". Write for descriptive data.



The HOMER MANUFACTURING CO., Inc.
DEPT. I-64 LIMA, OHIO

Producers of Magnetic Separator Equipment Since 1923

Handling Water with Less Labor



DEMING *Water Lubricated* **TURBINE** **PUMPS**

Automatically lubricated by the water being pumped, Deming Turbines eliminate oiling of shaft and bearings—a practical labor-saving advantage.

In mine gathering service, the vertical, multi-stage centrifugal pump construction of Deming Turbines permits operation through bore holes to dewater isolated or closed-off sections. As the pumping unit operates at the surface, it is quickly accessible for inspection at any time. This is another labor-saving advantage.

The simple, compact vertical construction of Deming Turbines reduces maintenance to a minimum. Special corrosion resistant material is available for acid water conditions. The wide range of capacities from 15 to 3000 gallons per minute meet practically all mine dewatering requirements.

Investigate the possibility of solving your pumping problems with a Deming Vertical Turbine Mine Pump. Write for recommendation. No obligation.

See our exhibit at Booths 1558-1560 American Mining Congress Coal Convention & Exposition, May 9-12, Public Auditorium, Cleveland, Ohio

THE DEMING COMPANY • 533 BROADWAY • SALEM, OHIO

DEMING
THE COMPLETE LINE
PUMPS AND WATER SYSTEMS

No matter what you make —you're not making it at a profit !

YOU MAY HAVE the finest product of its kind. Your production set-up may be a miracle of efficiency. Perhaps you've even discovered how to cut your cost-per-unit below that of your closest competition. The fact remains —

You're still not *making* anything at a profit. Because actually, of course, there is no such thing.

Goods can only be *sold* at a profit. And selling them profitably requires

the same kind of mechanization that keeps your production costs down.

In the *manufacture of a sale*, for example, there are five basic operations —

1. Seeking out prospects
2. Arousing their interest
3. Creating a preference for your product
4. Making a specific proposal
5. Closing the order

Any good salesman can handle all five. But no salesman should *have* to

— not when the first three can be mechanized so economically through the use of advertising.

For good advertising, like the machine on your production line, is a multiplier of individual effort, enabling all of us to produce (and *earn*) far more than we could alone.

And when it goes to work in *business papers* — with their tremendous concentration of hand-picked prospects — advertising becomes the most efficient machine available for manufacturing sales at a profit!



COAL AGE

is a member of The Associated Business Papers, who have published an interesting folder entitled, "10 ways to measure advertising effectiveness." We'll be glad to send you a copy. And if you'd like reprints of this advertisement (or the entire series) to pass along to others in your organization, just say the word.

ARMSTRONG-BRAY GEAR and WHEEL PULLERS



These powerful service tools pull gears, wheels, bearings and bushings from shafts, easily and quickly. They eliminate pounding, battering and breakage of vital machine parts. They make tedious and risky jobs fast and safe. They usually pay for themselves in the first job, and give years of satisfying service.

12 types, 40 sizes (including special designs for special application) with drop forged arms and heat treated forcing screws.

WRITE FOR CIRCULAR

ARMSTRONG-BRAY & CO.

5340 Northwest Highway
Chicago 30, Illinois



At Your Service . . .

The Searchlight Section is at your service for bringing business needs or "opportunities" to the attention of men associated in executive, management, sales and responsible technical, engineering and operating capacities with the industry served by this McGraw-Hill publication.

What makes one man
worth \$40,000
another only \$4,000?
This book shows

How to cultivate your top-executive qualities



Some facts
this book gives you

- the secret of executive personality
- 24 guideposts to productive thinking
- 11 aids for making decisions
- how to budget time most effectively
- how to talk to groups effectively
- 12 tested techniques for giving instructions
- how to handle responsibilities
- how to give yourself publicity

Here is a practical, inspiring book which brings you an amazing success formula. It outlines a specific, detailed plan for cultivating the qualities which mark the top-flight business leader today—illuminating each point with intimate, on-the-job studies of currently outstanding executives. It provides a blueprint for directing the same efforts and thinking which you already expend daily toward the definite goal of improving your executive ability.

DEVELOPING YOUR EXECUTIVE ABILITY

by Howard Smith, Personnel Consultant, Noted Lecturer, and Former Instructor with Dale Carnegie Institute. 225 pages, \$3.00

This valuable guide provides a blueprint that shows you how to win executive success. It is packed with helpful pointers that tell how the up-and-coming executive can make the most of his capabilities.

McGraw-Hill Book Co., Inc.
330 W. 42nd Street, N.Y.C. 36

Send me Smith's **DEVELOPING YOUR EXECUTIVE ABILITY** for 10 days examination on approval. In 10 days I will remit \$3.00 or return book post paid. (Postage paid on each order.)

Name _____
Address _____
City and State _____
Company _____
Position _____

See this book
10 DAYS
FREE
Mail Coupon
today

IDEA

FARM USE
OF ALUMINUM PAINT TO
PROTECT METAL CORN CRIBS

IMPORTANT TO
COAL PROPERTY
MAINTENANCE



FREE BOOK TELLS HOW

aluminum paint provides the best protection known against hot sun, moisture and fumes, as well as gleaming, stand-out appearance.

One coat completely hides any stained or discolored surface. Also answers many

other maintenance painting questions, important to coal operators. Shows money-saving advantages of using the RIGHT* aluminum paint. Send for your copy today. Address: Paint Service Bureau, ALUMINUM COMPANY OF AMERICA, 642 Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA



*The RIGHT aluminum paint for this job is ALUMINUM METAL & MASONRY PAINT, made by many paint manufacturers. Buy this paint from suppliers who display the Alcoa shield on the brand they sell. It is a symbol of quality, indicating that their aluminum paints are made with

ALCOA ALUMINUM PIGMENT



NUSSCO AUTOMATIC MINE SIGNALS

For Plain Haulage • Prevent Collisions
Save Trip Time

A two wire cable connects two or more signals together into one block. Only one signal can show proceed on the entrance of a trip, all other signals show stop.

NACHOD & UNITED STATES SIGNAL CO.
INCORPORATED
4771 Louisville Ave., Louisville, Ky.

- Low in Cost.
- Easy to Install.
- Write for Catalog.

CESCO ELECTRICALLY OPERATED TRACK SWITCH

Thrown by Motorman

Operates Switch Safely • Saves Time and Money

This modern track switch is thrown swiftly and safely by motormen as they sit in their cabs. It saves time and money, and is fool-proof and dependable!

Over 40 years experience manufacturing
ELECTRIC TRACK SWITCHES

Write for Catalog
CHEATHAM ELECTRIC SWITCHING DEVICE CO.
INCORPORATED
4780 Crittenden Drive, Louisville, Ky.

"We look into the Earth"

CORE DRILLING —anywhere!

PENNSYLVANIA Drilling Co.

DRILLING CONTRACTORS

1205 Charities Ave. PITTSBURGH, PA. Walnut 5816

PERFORATED METAL COAL MINING SCREENS

Manufactured exactly to your specifications.
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.

CHICAGO PERFORATING CO.

2115 West 51st Place
CHICAGO 8, ILLINOIS
VI. 2-6137

HAMMOND'S Safe BLASTING EQUIPMENT

EXPLOSIVE BOXES



Approved by the Pa. Dep't. of Mines, these rigid non-conductive explosive boxes represent a prime safety investment. Made entirely of wood—tongue-grooved and dovetailed construction—no metal parts—automatic lock—rubber band spring—moisture-resistant. Box sizes are based on 1 1/4" x 8" sticks.

POWDER BOX PRICES ARE AS FOLLOWS:
No. 9...\$2.05 ea. No. 25...\$4.20 ea.
No. 12...\$2.40 ea. No. 36...\$5.30 ea.
No. 16...\$2.85 ea. No. 50...\$6.40 ea.
No. 20...\$3.10 ea. No. 72...\$7.50 ea.

DETONATOR BOX PRICES ARE AS FOLLOWS:
No. 6, size 2 1/4" x 3" x 6" inside \$1.70 ea.
No. 8, size 2" x 2 1/2" x 8" inside \$1.70 ea.

WOOD TAMPING POLES

For tamping explosive shots. Poles are made of hardwoods... lengths to 10 ft. Price per lineal ft. 1" dia. 6c, 1 1/2" dia. 9c, 1 3/4" dia. 10c, 1 7/8" dia. 12c, 1 5/8" dia. 14c, 1 1/2" dia. 20c.

SECTIONAL TAMPING POLES

Poles are made of wood coupled together by means of a wooden pin held in place by a rubber band. Easily and quickly assembled. 4" dia. Head Block, \$3.10 ea.; 4" dia. Coupler, \$3.40 ea.; Poles are 1 1/2" in dia.; 12' long, \$2.40 ea.; 14' long, \$2.80 ea.; 16' long, \$3.20 ea. Special diameters and lengths can be furnished.

J. V. HAMMOND CO., Spangler, Pa.

We also manufacture Shot Firing Units, Wooden Mallet and Wedge Sets, Trolley Poles, Sounding Sticks, Mine Rollers, Insulation Blocks and Brake Blocks.

At Your Service

—for bringing business needs or "opportunities" to the attention of men associated in executive, management, sales and responsible technical, engineering and operating capacities with the industries served by the following McGraw-Hill publications:

THE SEARCHLIGHT SECTIONS

(Classified Advertising)

Air Transport	Electronics
American Machinist	Engineering and Mining
Aviation Week	Journal
Business Week	Engineering News-
Bus Transportation	Record
Chemical Engineering	E. & M. J. Markets
Coal Age	Factory Management and
Construction Methods	Maintenance
Electrical Construction	Food Industries
& Maintenance	Power
Electrical Merchandising	Product Engineering
Electrical Wholesaling	Textile World
Electrical World	Welding Engineer

For advertising rates or other information
address the

Classified Advertising Division

McGraw-Hill Publishing Co., Inc.

330 W. 42nd Street

New York 18, N. Y.

Sink-Float Magnetite "MAGNAFLOAT"

Correctly sized Magnetite for sink-float treatment of coal or other minerals. Standard grinds;

Grade A—Approximately 100 mesh with 60 to 70% passing 325 mesh.

Grade B—Approximately 100 mesh with 90% passing 325 mesh.

Other sizes to order.

Executive Offices

FOOTE MINERAL COMPANY, INC.

302 Germantown Trust Bldg. Philadelphia 44, Pa.
Over 50 years grinding experience.

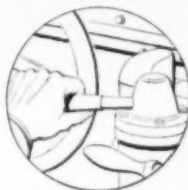
FLORY HOISTS



Manufacturers of Steam, Electric and Gasoline Hoists of all types; also parts for all model Flory Hoists.

**FLORY MANUFACTURING COMPANY,
BANGOR, PENNSYLVANIA**

users **CUT COSTS** with



WESTINGHOUSE HYDRAULIC BRAKES

1. Brake shoe life increased from 1 week to 3 months
2. Wheel turning decreased 50%
3. Motor bucking to check speed or stop entirely eliminated
4. Shocks to mechanical and electrical apparatus greatly reduced
5. Less sand required . . . better rail contact cuts power loss and overheating.

The results listed show why users say these brakes pay for themselves in a short time through reduced maintenance. Simple, rugged, compact equipment can be fitted into available space. Installation can be made any time locomotive is stopped for maintenance. Ask for Bulletin SP 9092 for details.

Westinghouse Air Brake Co. X

Industrial Division: Wilmerding, Pa.

Stocked and Distributed By **NATIONAL MINE SERVICE COMPANY**
Beckley, West Virginia

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RELEASED

UNDISPLAYED RATE.
Not available for equipment advertising 90¢ a line. Minimum 4 lines. To figure advance payment count 5 average words as a line.
(See [] on Box Numbers.)
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, 90 cents a line an insertion.

NEW ADVERTISEMENTS received by 10 A.M. April 8th will appear in the May issue subject to limitations of space available.

INFORMATION:
BOX NUMBERS in care of any of our New York, Chicago or San Francisco offices count one additional line in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED RATE
The advertising rate is \$7.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured 1/8 inch vertically on one column, 3 columns—30 inches—to a page. C.A.

REPLIES: (Box No.) Address to office nearest you.
NEW YORK: 330 E. 42nd St. (18)
CHICAGO: 500 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITION VACANT

WANTED GENERAL Manager for development and operation of a large fee coal property, located directly on river transportation, 3' to 4' coal, all belt operation. Must have training, experience and capacity to assume full responsibility of management. No others need apply. The man we are looking for is probably now in a responsible position with a large organization but with little opportunity for advancement. State full particulars. P 8399, Coal Age.

POSITION WANTED

MINING-MECHANICAL ENGR. wishes permanent connection; wide experience planning, developing, operating complete coal properties, both strip and underground. Good draftsman. Sober, energetic, good health and owns equipment. PW 8108, Coal Age.

MINE MAP Draftsman: Good letterer. PW 8100, Coal Age.

WANTED

ANYTHING within reason that is wanted in the field served by Coal Age can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

SALES EXECUTIVE FOR COAL ORGANIZATION

Must be capable and experienced handling Bituminous Southern West Va. coal.
Excellent connections necessary. Reply indicating experience, references, salary desired.
Box 1694, 1474 Broadway, New York City.

WANTED

WANTED MINE LOCOMOTIVE

4 to 6 ton, 42" Gauge. Also 24" to 36" Stationary Flight Conveyor, 18' to 20' long.

**W 8485, Coal Age,
330 W. 42nd St., New York 18, N. Y.**

WANTED

Coal Preparation Engineer experienced on sink float, flow sheet and plant layout. Work will be on design and manufacture of plants.

Position permanent—salary dependent on ability.

Apply:

HEYL & PATTERSON, INC.

55 Water Street

Pittsburgh 22, Pennsylvania

MOTOR GENERATORS

500 KW G.E. SYN. 575 V. 900 RPM. 2300/4000 V. 3 P. 60 C. SWITCHGEAR.
 400 KW WEST. SYN. 575 V. 720 RPM. 2300/4000 V. 3 P. 60 C. SWITCHGEAR.
 300 KW G.E. SYN. 275 V. 1200 RPM. 440/2300/4600 V. 3 P. 60 C. SWITCHGEAR.
 300 KW RDWY. SYN. 275 V. 1200 RPM. 2300/4000 V. 3 P. 60 C. SWITCHGEAR.
 200 KW G.E. SYN. 275 V. 900 RPM. 2300/4000 V. 3 P. 60 C. SWITCHGEAR.
 150 KW G.E. SYN. 275 V. 1200 RPM. 2300/4000 V. 3 P. 60 C. SWITCHGEAR.

SYNCH. CONVERTER

300 KW G.E. 575 V. Type HCC, 6 P. 60 C. 1200 RPM. Pedestal Type. 2300/4000/6900/13,200 V. Trans. & Switchgear.

LOCOMOTIVES

30-T Joffrey 250 V.MH-77 Mts. 48"-36" Ga.
 20-T Joffrey 250 V.MH-77 Mts. 48"-36" Ga.
 13-T Joffrey 250 V.MH-110 Mts. 42"-32" Ga.
 13-T G.E. 250 V.HM-827 Mts. 44"-36" Ga.
 10-T Joffrey 250 V.MH-110 Mts. 44"-36" Ga.
 8-T G.E. 250 V.HM-839 Mts. 44"-36" Ga.
 8-T West 250 V. 906-C Mts. 44"-36" Ga.
 6-T West. 250 V. 903-B Mts. 32"-22" Ga.

WALLACE E. KIRK CO.

501 Grant Building

Pittsburgh, Pa.

Electrical Equipment

Converters, Motor Generator Sets, A.C. and D.C. Motors, Control Equipment and Transformers.
 We build equipment to fit your requirements. Over 25 years engineering background.

C. B. LOCKE CO.
 P.O. BOX 3227, TEL. 38-136
 CHARLESTON, W. VA.

NEW and REBUILT

MOTORS

150 HP, 900 RPM, Elec. Mch., 220/3-60 Syn.
 125 HP 1800 RPM, West. RR 230 v. D.C.
 80 HP, 1200 RPM, Cr. Wh. 220/440/3-60 Ind.
 75 HP, 900 RPM, Elec. Mch., 220/3-60 Syn.
 75 HP, 1800 RPM, US 220/440/3-60 Syn.
 50 HP, 1200 RPM, GE 220/3-60 Slip Ring.
 5, 7 1/2, 10 and 15 HP. AC & DC TEFC & Open.

SYNCHRONOUS ROTARY CONVERTERS

Qa.	KW	Make	Speed	DCV
1	500	Whse.	1200	880
2	300	G.E.	1200	880
1	300	Whse.	1200	275
4	175	G.E.	1200	275
1	175	3 ph. 60 cycle G.E.	1200	275
1	75	G.E.	1800	275

SCALES—CRUSHERS VIBRATING SCREENS CONVEYORS—FEEDERS BALL BEARING IDLERS

Immediate Shipment at Reduced Prices

3-Roll Idlers:	14" belt width, \$21.00
16" belt, \$21.50;	18" belt, \$22.30
24" belt, \$23.40;	30" belt, \$24.90
36" belt, \$26.00;	42" belt, \$27.30
48" belt width, \$28.50.	
1-Roll Idlers:	24" belt width, \$23.35
30" belt, \$24.90;	36" belt, \$26.00
42" belt, \$27.00;	48" belt, \$28.15

Conveyor for mines and tipples priced from \$ 665.00
 Picking tables 665.00
 Plate Feeders 145.00
 Stoker Coal Crusher 474.00
 Large Coal Crusher 1074.00
 15-ton Truck Scale 450.00
 20-ton Truck Scale 510.00
 33-ton Truck Scale, 34' platform 1650.00
 5-ton Tipple Scale 312.00
 10-ton Tipple Scale 582.00
 Vibrating Screens, 2' to 5' wide, many lengths, 1 to 5 decks. All with screen cloth or plates to customers' specifications. Priced from 395.00

BONDED SCALE & MACHINE COMPANY

2190 S. Third Street, Columbus 7, Ohio
 Phone: Garfield 2186; University 2832. Evenings

Prompt ANSWERS to business problems . . .

MISCELLANEOUS business problems are daily being solved quickly and easily, by the use of the Searchlight Section of this and other McGraw-Hill publications.

The Searchlight Section is classified advertising; you can use it at small cost, to announce all kinds of business wants of interest to other men in the fields served by these publications. It has long been the accepted meeting place of men with business needs and the men who can fill those needs.

When you want additional employees or a position, want to buy or sell used or surplus new equipment, want products to manufacture, seek new capital or factory sites or have other business wants—advertise them in the Searchlight Section for quick, profitable results!

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., Inc.

330 West 42nd Street • New York 18, N. Y.

SEARCHLIGHT

(Classified Advertising)

SECTIONS

are found in these
McGraw-Hill
 Publications:

- American Machinist
- Aviation Week
- Business Week
- Bus Transportation
- Chemical Engineering
- Coal Age
- Construction Methods
- Electrical Construction & Maintenance
- Electrical Merchandising
- Electrical World
- Electronics
- Engineering & Mining Journal
- E & M J Metal & Mineral Markets
- Engineering News-Record
- Factory Management & Maintenance
- Food Industries
- Power
- Product Engineering
- Textile World
- Welding Engineer

BARGAINS IN COAL MINE EQUIPMENT FULLY RECONDITIONED

GENERATORS—DIESEL

- 3—D-13000 Caterpillar Diesel Generators, 75 KW, 440 Volts, A.C.
- 1—D-4400 Caterpillar. V-belted to 30 KVA AC Generator.

LARRY CARS

- 1 Connellsville Larry Cars, Trolley Operated, 6 Ton Capacity.

PIT CARS

- 150—Card Iron Works R.B. Pit Cars, 36" Gauge.
- 1—Card Iron Works Rock Car, 90 Cu. Ft. Capacity.

VIBRATING SCREENS

- 1—3' x 6' Single Surface Tyler-Niagara, V-belted to 5 HP. AC Motor.
- 1—3' x 6' Single Deck Plat-O, Flat Belt Drive to 2 HP.

INGERSOLL-RAND MOTOR MOUNTED PUMPS

- 2—2RV-1—100 GPM, 25' Head.
- 1—ORVF-1—20 GPM, 50' Head.
- 3—RV-3—120 GPM, 55' Head.
- 1—RVH-7½—150 GPM, 120' Head.
- 1—1½RVH-10—125 GPM, 200' Head.
- 4—2RVH-15—200 GPM, 150' Head.
- 1—3RVH-25—400 GPM, 180' Head.

MAGNETIC PULLEYS

- 1—24" Conveyor, 5/6" Centers, equipped with 18" dia. x 26" face Ding's Magnetic Pulley, with charger. Unit driven by 1 HP 3 ph. 60 cy. Gen. Elec. Gear Motor.
- 2—24"x26" Ding's Magnetic Pulleys, 250 volts DC, without chargers.

FLIGHT CONVEYORS

- 1—8" Flight Conveyor—65' Long.
- 1—10" Flight Conveyor—30' Long.
- 2—24" Flight Conveyors—50' Long.
- 1—24" Flight Conveyor—85' Long.
- 1—30" Flight Conveyor—150' Long.

BELT CONVEYORS

- 1—24", 15' Long, with Ding's Pulley.
- 1—30", 30' Long, with 2 H.P. Gearhead Motor. New belt.
- 1—30", 70' Long, with driving mechanism.

COAL CUTTERS

- 1—Sullivan CE-7 AC Short Wall, complete with Tip-trunk and Reel.
- New CE-7 Cutting Machine Parts.

COAL WASHING EQUIPMENT

- 2—Rheolaveur Launderers, complete with Steel Supporting Frame.
- 1—60" Dia. Dividing Table, direct connected to 2 HP. DC. Motor.
- 1—Galigher Auto. Sampler with adjustable stroke and direct connected to a 1/6 HP. Motor.
- 1—12' x 10' Steel Hopper Bin.
- 1—70' x 12' Dorr Thickener Tank, complete with mechanism.

HOISTS

- 1—No. 22 Vulcan, with Man Cage, 30' Steel Headframe and 40 HP. Single Speed Elevator Type Motor, equipped with Solenoid Brake (Hoist purchased new in 1942).
- 1—Single Drum Gasoline Hoist, direct connected to 2½ x 4¼ Wisc. Gas Engine.

SLUSHER HOISTS

- 1—Ingersoll-Rand, 3 Drum, with direct connected 50 HP. AC. Motor, and 2—1½ Yd. Crescent Scrapers. Unit used about 60 days.

TROLLEY LOCOMOTIVES

- 2—7½ Ton Goodmans, 36" Gauge, 250 Volt DC.

WAGON DRILLS

- 1—Ingersoll-Rand, with drifter, all on pneumatic tires, used about 6 months.
- 1—Sullivan #1W-6, with drifter, on steel wheels. AC Motor.

COAL CRUSHERS

- 1—36" American Ring Type.
- 1—24 x 20 Jeffrey Swing-Hammer Mill.

AIR COMPRESSORS

- 1—8½ x 4½ x 5 Pneumatic, 277 cu. ft. displacement. V-belted to a D-4400 Caterpillar Diesel Engine—Semi-portable.

MINE FANS

- 1—8-H60 Jeffrey Aerodyne Exhausting Fan, with 75 HP. Motor—Purchased new in 1942.

MOTORS—AC

- 16—¼ HP. New Leland Single Phase Motors.
- 10—½ HP. New Leland Single Phase Motors.
- 8—¾ HP. New Leland Single Phase Motors.
- 2—1½ HP. New Leland Single Phase Motors.
- 2—2 HP. New Louis Allis 3 Phase Motors.
- 1—3 HP. New Leland 3 Phase Motor.
- 1—5 HP. New Leland 3 Phase Motor.
- 2—1½ HP. Used G.E. 3 Phase Motors.
- 1—2 HP. Used Wagner 3 Phase Motor.
- 9—5 HP. Used G.E. 3 Phase Motors.
- 3—10 HP. Used G.E. & West. 3 Phase Motors.
- 1—20 HP. Used West. 3 Phase Motor.
- 2—25 HP. Used G.E. 3 Phase Motors.
- 2—30 HP. Used G.E. 3 Phase Motors.
- 3—35 HP. Used G.E. 3 Phase Motors.
- 1—40 HP. Used Allis-Chalmers 3 Phase Motor.
- 1—50 HP. Used G.E. 3 Phase Motor.
- 1—75 HP. Used G.E. 2200 volt, 3 Phase Motor.

MISCELLANEOUS EQUIPMENT

- 15 Tons—40# Rail.
- Plate Frog Switches—30# to 60#.
- 2/0 & 4/0 & 250,000 CM Stranded R.C. Wire.
- 4/0 Round Trolley Wire.
- Switchboard Equipment.

COMPLETE LISTING MAILED UPON REQUEST

FLORENCE

MACHINERY AND SUPPLY COMPANY

SUITE 904, EQUITABLE BUILDING DENVER 2, COLORADO

C. J. PARRISH, MGR.

Phone: Alpine 2803
Yards: Denver and Florence, Colorado

IMMEDIATELY AVAILABLE-MINING EQUIPMENT

MINING MACHINES

Jeffrey: 2-35B and one 35BB, 230 volt, 3 phase A.C. 12A, 230 V. 1-21B Low Vein, 4-29B, 29C, 29K, with shearing head. Also 1 on cat. Reversing head for 29C. 2-Longwall 24B. Goodman: 12A, 12AB, 12AA, 12GSA, Shortwall: 1-1203, 230 volt. 1-Hitch Clutter for Cross Head timbers. 1-194 EJ Shabbing Machine, permissible type. 230 and 240 volts. Sullivan: C87, C29.

SUBSTATIONS-275 volts, D. C.

1-75 KW G. E. Rotary Converter 275 volt D. C. transformers, 1 stage. 220 440-2200/4000. 1-300 KW Westinghouse 3 phase converter. 275 D. C. transformers, 4000/6000 A. C. 1-100 KW Westinghouse MG set. 275 D. C. 2300 volt A. C. 1-100 KW G. E. MG Set. 275 D. C. 440 volt A. C. in portable building.

LOCOMOTIVES

Goodman: All 250 volts. 1-4 ton, 30 B 45", 1-5 ton, 2000 B. 1-4 ton, 30 B 20" gauge. 1-4 ton, type RA. Westinghouse Units: All 250 volts. 200, 102, 904 and 115. Bar steel frames, 4 ton, and 1 ton. G. E. All 250 volts. 4 ton, 102, 45" rebuilt. 4 ton, 839. Discontinued. 1-4 ton type H31 61, 36" or 45" ga. Tandem Converters with cables, new, for use with 2-4 ton locomotives, 250 volt. 5 ton 825, 41" and 34". Discontinued. 2 motors for 4 ton 839.

LOCOMOTIVES

Jeffrey: 4 ton, 250 volts, type MH73. 1-4 ton MH 12 Rebuilt Locomotive motors and Crabs and Reels for Locomotives.

SPARE ARMATURES

Jeffrey: MH16, MH116, MH70, MH73 and MH64-300 V. and 500 V. 20B, 35B and 28A, 35BB, 25A, 29C, 29L, 33L. Goodman: 200, 30C, 12A, 12AB, 112AA. General Electric: 901, 810, 821, 825, 830, 61. 100 KW TC-6, form A, Bracket Type, 150 KW G. E. HCC, form A. Westinghouse: 901, 905, 102, YH2, 115, 230 V. Sullivan: C87, C29 and C810.

OTHER ITEMS AVAILABLE

Aerial Tramways. Belt Conveyors: 1 Bucket Elevator Conveyor. Belt Sharpeners, 2 Sullivan. Band Welders: Resistance and M.G. sets. Circuit Breakers: AC and DC. Circuit Breakers: Automatic, 250 volt. Circuit Breakers, Manual: 400 amps to 2,000 amps. Coal Crushers: (double roll) 18"x20", (single roll) 24"x24", 12"x16". 1-20" Williams #3 Coal Crusher. Conveyors: Scraper type. Apron and grate bar screening type. Screens: 1 shaker 3 track, feeder reciprocating and apron pan type. Compressors & Jackhammers, Compensators. Drop Bar Bumpers: (Goodman) 25B and 30C. 1 Reversing head for 29C. Dumps: (Goodman). Field Frames: 4-Jeffrey MH 85 new, MH 73, MH 78, Westinghouse 102, 115 and 902, General Electric HM 839, 819, 782, 825, Goodman 29 A, 15 ton and others.

OTHER ITEMS AVAILABLE

Generators: DC 250-275 volt, 30 KW to 125 KW. 1-AC Generator, 31.3 KVA, 3 ph. 208 volt, General Electric with Exciter. Hoists: Overhead: AC 3-60-440-225, 1 ton and 3 ton, Crane and Hoist. Also single and double drum. Lathes: Miscellaneous and machine tools. Loading Machines: 2-Meyers-Wheeler 27B and 4. 1-4H1 Joy loading machine. 1-12H1 Joy loading machine. Locomotives: 2-Jeffrey 4 ton MH 88, 1-4 ton MH 12, 1-10 ton MH 73, Ironing 3 ton, 36 to 48" gauge. Westinghouse 1-901, 48" gauge, 2-General Electric 4 ton type 701, 4 ton HM 819 and 821. Locomotive Frames: Goodman 8 ton type 32, Jeffrey 4 ton MH 88, 18 ton MH 78, 8 ton MH 100, 4 ton MH 90. Milling Machines: horizontal and vertical. Mining Machine Trucks and 2 on Catts for short wall and arc wall. Motor Starters and Controllers: AC and DC. Synchronous Motor Starters, full magnetic, across the line, 3-40 4150, 2-200 H.P. and 7-250 H.P. 1-100 H.P., 1-165 H.P., 440 volt, both reversible. Pumps: Rebuilt and New. Retarders for railroad cars. Seats: Mine Car and Truck. 1-Slate Lorry. 3-Car haul trip makers. Transformers: 1-55 KVA 22,000/12,000 to 102/203, 3-35 KVA, 22,000/12,000 to 176/69 volts, 3-100 KVA 6,000/12,000 to 2,300, 1-300 H.P. 440v, 1000 to 175, 90. Nine Cars: 14" gauge, rotary dump type. 1-Retory Dump, 10" gauge with car feeders. Crane: Floor Type, 3 ton, height 12 ft.

GUYAN MACHINERY COMPANY,

Logan, W. Va.

TRANSFORMERS FOR SALE

- 3-300 KVA A. C. 22000-2300
- 3-300 KVA G. E. 2400-2410
- 1-400 KVA G. E. 12200-120240
- 6-333 KVA G. E. 32000-2300-1000V
- 4-233 KVA G. E. 12000-120240
- 1-233 KVA G. E. 12000-230460
- 1-250 KVA G. E. 4000-1150V 220-440
- 2-250 KVA W. H. 2400-120240
- 4-150 KVA G. E. 22000-2200-1000V
- 3-150 KVA Wag. 2200-220460
- 4-150 KVA G. E. 2200-1000V 220-115
- 1-100 KVA G. E. 32000-2200
- 3-100 KVA Potts 22000-2200
- 3-100 KVA G. E. 11000-2200-1000V
- 1-100 KVA G. E. 12200-2100
- 3-50 KVA G. E. 32000-2400-1100V
- 3-50 KVA Potts 24000-2200-1000V
- 4-37 1/2 KVA W. H. 12200-120240
- 10-5 KVA G. E. 2200-115220
- 10-1 1/2 KVA Wag. 2200-120240 "HEA"

TRANSFORMERS WANTED

Reliable repaired and repair service on all makes of transformers.

THE ELECTRIC SERVICE CO.
Cincinnati 27, Ohio
Estab. 1912



W. O. SETS-AC to DC
200 KW G. E. DC 125 250 V. motor 220 440 V.
250 KW Allis Ch. DC 250 V., synch. motor 440 V.
200 KW Ridgway DC 250 V., synch. 2300 4000 V.
150 KW Cr. Wh. DC 250 V., synch. motor 440 V.
100 KW G. E. DC 250 V. motor, 2200 V.
80 KW Star DC 250 V., synch. motor 440 V.

D. C. MOTORS-220/250 V.
150 HP Cr. Wh. b.b. TEFC 800 RPM.
100 HP Waco. SK181 450,000 RPM.
100 HP G. E. type 575 1150 RPM.
80 HP G. E. CDM 1,800 RPM, b.b. drip (2).
75 HP Cr. Wh. CMC, 1150 RPM, b.b. (3).
75 HP Allis-Ch. E. 800 RPM, note starter.
60 HP Waco. SK 1700 RPM.
50 HP G. E. CD 123 850 RPM.
25 HP G. E. CDB 1750 RPM.
D.C. Generators-250 V.
150 KW, 100 KW, 90 KW, 75 KW, 50 KW.

Complete Stock A.C. Motors-New and Rebuilt Up to 500 H.P.-60 Cags, Slip Ring, Synch.
SPECIAL-2-300 H.P. Allis-Ch. slipping motors, 720 RPM, 2,200 volts.
Gear Head Motors Speed Reducers Pumps-Blowers
WRITE - WIRE - PHONE

ARTHUR WAGNER CO.
1433 W. Randolph St. Chicago 7
ELECTRIC MOTORS - GENERATORS

IN STOCK USED D.C. MOTORS

- 7 1/2 hp G.E. 220 v. 450-1350 r.p.m. \$150.
- 7 1/2 hp G.E. 120 v. 400-1300 r.p.m. \$150.
- 7 1/2 hp G.E. 220 v. 1150 r.p.m. \$95.
- 3 hp. C.W. Vertical, 220 v. -600 r.p.m. \$115.
- 3 hp. G.E. 220 v. 420-1500 r.p.m. \$120.
- 3 hp. West. 220 v. 835 r.p.m. \$75.
- 2 1/2 hp G.E. 220 v. 520-1500 r.p.m. \$80.
- 1 1/2 hp G.E. 220 v. 525-2100 r.p.m. \$65.
- 1 hp G.E. 220 v. 1150 r.p.m. \$35.

All Motors Tested Before Delivery.

FALK MACHINERY COMPANY
18 Ward St., Rochester, N. Y.
Main 6347-48

REBUILT MINING MACHINES

- 2-112AA Goodman Universal, D. C.
- 4-1123A Goodman Universal, 220 V. A. C.
- 2-112G3 Goodman Universal, 220 V. A. C.
- 1-12AB Goodman Universal, D.C., Permissible type.
- 3-35B Jeffries Machines, 250 V. D. C.
- 4-C87 Sullivan Machines, A.C.-D.C.
- 1-78 Sullivan Machine, 250 V. D. C.

LOCOMOTIVES

- 2-4 Ton Goodman type 33 Ball Bearing.
- 1-8 Ton Goodman type 32 Ball Bearing.
- 2-5 Ton Goodman type 2600 Ball Bearing.
- 1-4 Ton G. E. type 42 inch Gauge.
- 1-5 Ton Mauch Storage Battery Locomotive, 36 and 42 inch Gauge, Height, 43 inches. Complete with Storage Battery and Charging Panel.
- 2-4 Ton Westinghouse Ball Bearing.

LOADING MACHINES

- 2-88U Joy 42-Inch Gauge on Catts, D. C.
- 3-88U Joy 42-Inch Gauge on Catts, D. C.

THOMAS GILLESPIE & SON

State Rd. 67 - Bicknell, Ind.
Phones 179 and 140 L. and 149 K.

NEW and REBUILT STORAGE BATTERY

LOCOMOTIVES
1 1/2 to 10 Ton 13" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pa.

MINING EQUIPMENT

- 9 ton Westings. 36" ga. battery type locomotives, new 1945.
- 45 ton Davenport diesel electric locomotive, new 1942.
- 80 ton Lima steam switching locomotive, new 1944.
- 1 1/2 yd. Lima 701 diesel dragline, new 1942.

MISSISSIPPI VALLEY EQUIPMENT CO.

511 Locust St., St. Louis 1, Mo.

HIGH GRADE TOOLS

- 21A Warner & Swasey Turret Lathe.
- 22 Warner & Swasey Turret Lathe.
- 4 36 Cincinnati Hydraulic Mill.
- 24" x 108" Centers Sidney 16 speed Geared Head Lathe.
- 18" x 54" Lodge & Shipley G.H.
- 13" x 42" Centers LeBlond Super Regal Lathe.
- BGI-462 Keller Automatic Toolroom Machine.
- 25 Oaklane Horiz. Boring Mill.
- 14x18x72 Gailmeier Livingston Surface Grinder.
- 24" 30" x 42" Ballhead Vertical Turret Lathe.
- 2" to 7" Plate Radial Drills.
- 16" and 24" O. & E. Shapers.
- 24 Cincinnati Vert. Miller, late type.
- 120 A 51 Gardner Opposed Wheel Grinder.
- 20" Cincinnati Shaper, late type.

Also various other machine tools.

Send us your inquiries

Cincinnati Machinery Company, Inc.
217 E. Second St. Cincinnati 2, Ohio

SEARCHLIGHT SECTION

MOTORS and ELECTRICAL EQUIPMENT

SQUIREL CAGE MOTORS

Qu.	H.P.	Make	Type	Volts	R.P.M.
1	400	G.E.	NT 412	2300	430
1	400	G.E.	NT 412	550	450
1	300	Al. Ch.	AR	440	500
1	250	White	C.S.	2200	1160
1	250	White	C.S.	440	1160
1	200	Al. Ch.	AR	220-440	500
1	150	El. Mch.	RC	220	1200
1	150	White	C.S. 772	2200	1170
1	150	White	C.S. 772	440	1170
1	150	G.E.	I.N.	440	720
1	150	Cr. Wh.		440	600
1	125	White	C.S. 751	110	1750
1	125	White	C.S. 772	2200	1170
1	125	White	C.S. 772	440	1170
2	125	Al. Ch.	AR	440	425
2	125	Cr. Wh.		440	430
1	100	G.E.	I.N.	110	1755
1	100	White	C.S. 603	440	1750
1	100	Al. Ch.	AR 226	2200	1100
1	100	Al. Ch.	AR 226	440	1100
1	100	P.M.	HS-501	440	600
2	100	G.E.	NT 550	2200	865
2	100	G.E.	NT 550	550	865
1	100	Al. Ch.	AR	550	600
2	100	P.M.	H-211B	440	425
1	75	Al. Ch.		2200	1765
1	75	Al. Ch.		550	1765
1	75	White	C.S.	440	1750
1	75	G.E.	AR 452	440	1200
1	75	Burke	PM-10	550	720
1	50	Idol	AT 445	440	1750
1	50	Al. Ch.	AR 220-D	440	1150
1	50	G.E.	I.N.	440	805
1	50	White	C.S.	440	600
1	40	Master	P-1 115	110	1170
1	40	G.E.	I.N.	440	300
1	40	Al. Ch.	AR	440	600
1	40	P.M.	H-120	220	800
1	40	White	C.S.	440	600

POWER - TRANSFORMERS - DISTRIBUTION
SINGLE PHASE-60-CYCLE - OIL COOLED
Qu. KVA Make Type Phase Voltage

1	750	G.E.	rand	3	7200-400/230
(WITH AIR BLASTING EQUIPMENT TO GIVE					
1	85	K.V.A.	cond.	OUTP.T.	
4	500	G.E.	"H"	1	12200/11800-220-440

2	500	G.E.	"H"	1	2200/1100V-220-440
2	250	White	DRY	1	2100-120-220
2	120	G.E.	"H"	1	10000-9500/250/2200
1	100	White	"H"	1	4500-2400
8	150	G.E.	"H"	1	4100-120-240
2	75	G.E.	"H"	1	2400-120-240
1	50	Al. Ch.	"H"	1	2200-220
2	50	Wagner	"HRC"	1	12200/11800-275/287.5
1	30	G.E.	"H"	1	2400-1100V-120-240
1	30	G.E.	"H"	1	1100-2200-600
1	25	G.E.	"H"	1	3400-120-240
1	25	White	"H"	1	2200-220-160
1	25	White	"H"	1	2200-110-220
1	15	G.E.	"H"	1	2100-120-240
2	15	White	"H"	1	2200-1100-220-110
1	15	White	"H"	1	2200-110-220
2	15	Railman	DRY	1	440-240
2	10	Epitrag	"H"	1	2400-120-240
1	10	White	"H"	1	2400-240-180
1	5	Epitrag	"H"	1	2200-115-220

New. Unused. Air Cooled Dry Type

SLIP RING MOTORS - CONSTANT DUTY

Qu.	H.P.	Make	Type	Volts	R.P.M.
2	2000	G.E.	I.T.	2200	120
1	1200	White	C.W.	2200	500
1	400	G.E.	MT 12	2200	600
1	400	G.E.	MT 412 V	2200	710
1	500	G.E.	I.M.	2200	600
1	500	White	C.W.	2200	600
1	500	G.E.	I.M.	550	600
1	500	White	C.W.	550	600
1	500	G.E.	I.M.	440	600
1	400	G.E.	I.M.	2200	875
1	400	G.E.	I.M.	550	875
1	400	G.E.	I.M.	440	600
1	400	Al. Ch.	ANV	514	514
1	100	G.E.	MT 422	2200	600
1	100	G.E.	MT 422	440	600
1	100	G.E.	I.M.	1200	1200
1	200	G.E.	I.M.	550	1200
1	200	G.E.	I.M.	440	1200
1	200	Al. Ch.	ARV	200	205
1	275	White	H.F.	440	245
1	250	G.E.	M.F.	2200	600
1	250	White	C.W-1100	2200	600
1	250	White	C.W-1100	2200	600

1	250	White	C.W-1100	440	600
1	200	Al. Ch.	ARV	2200	585
1	100	White	C.W.	220-440	600
1	150	G.E.	I.M.	220-0	1750
1	150	G.E.	I.M.	550	1750
1	150	G.E.	I.M.	440	1150
1	125	Al. Ch.	ARV	440	900
1	75	G.E.	I.M.	220-440	605
1	50	G.E.	MT 530	2200	1150
1	50	G.E.	MT 530	440	1150
1	50	Al. Ch.	ARV	2200	400
1	40	G.E.	I.M.	600	1170
1	40	G.E.	MT 340	550	560
1	40	Al. Ch.	ARV	2200	425
1	40	Al. Ch.	ARV	550	425
1	30	White	C.W.	440	1160
1	25	White	C.W-4810	220	1750
1	25	Al. Ch.	ARV	2200	800
1	25	G.E.	MT 332	2200	800
1	25	G.E.	MT 332	550	850
2	25	G.E.	MT-520	440	840

2 bearing.

MOTOR GENERATOR SETS

Qu.	K.W.	Make	Type	R.P.M.	D.C.	Volts A.C.
1	0	G.E.		1200	220	220-440
1	25	Westingh.		1200	220	220
6	25	Westingh.		1200	220	220-440
1	50	G.E.		125	220	220-440
1	50	Lo. Al.		1200	220	220-440
1	75	Westingh.		1200	125	220-440
1	75	G.E.		600	250	220
2	94	G.E.		1200	60	220-440
1	100	Cr. Wh.		720	250	440-2200
1	100	G.E.		1200	250	440-2200
1	100	Belmont		1200	250	220-440
1	100	Burke		720	250-275	440-2200
1	300	G.E.		720	250-275	440-2200
1	300	Westingh.		1200	140-258	440-2200
1	600	Westingh.		720	275	440-2200
1	750	Al. Ch.		720	250	440
1	750	G.E.		114	275-300	2200-1100
1	1000	G.E.		514	600	2200-1100

Above furnished complete with A.C. and D.C. panels and A.C. control.

T. B. MAC CABE COMPANY.

4314 CLARISSA STREET

PHILADELPHIA, PENNA.

MINE AND SLOPE HOISTS

- 1-20,000 lb. Vulcan Dbl. Drum AC
- 1-35,000 lb. Nordberg Sgl Drum AC
- 1-10,000 lb. Cap. Nordberg Sgl Drum AC
- 1-17,000 lb. Ottumwa Sgl Drum AC
- 1-10,000 lb. Lidgerwood Sgl Drum AC
- 1-16,000 lb. Sgl Drum Lidgerwood AC
- 1-15,000 lb. Wash. Iron Wks Sgl Drum AC
- 1-30,000 lb. Allis-Chalmers Sgl Drum AC
- 1-30,000 lb. Dbl Munday w/o motor

CRUSHERS

- 2-No. 800B Pitman, new
- 1-12x16 Eagle Dbl Roll
- 1-24" American pulverizer
- 1-30x34 McNally Pitts. Sgl Roll
- 1-10x20 Universal Sgl Roll portable
- 1-24x20 Penn. Sgl Roll
- 1-No. 75 Marcy Ball Mill
- 1-24x20 Dixie Hammer Mill
- 1-40x22 Pioneer Dbl Roll with Hopper

DIESEL GENERATING EQUIPMENT

Units, 200 to 900 KW with diesel engines.

HAWKINS & CO.

154 So. Michigan Ave., Chicago 3, Ill.
TELEPHONE HARRISON 7-0725

M-G SETS

Match your present M-G Sets while you can:
2-150 kw General Electric Motor-Generator Sets,
type ATI Motor, 3 phase, 60 cycle, 2300-4000
volt, 1200 rpm-Type MPC Generator, 275
volts DC. Complete with switchboards.

MOTORS

Send us your inquiries for NEW Allis-Chalmers
AC ball bearing motors-STOCK SHIPMENT.

R. H. BENNEY EQUIPMENT CO.

5024 Montgomery Rd. Norwood, Ohio

MINING EQUIPMENT

REAL BARGAINS

MOTOR GENERATOR SET

Westinghouse, 75 KW, 2200 Volt AC,
275 Volt DC, 4000-2300 AC.

ROTARY CONVERTERS

General Electric, 50 KW, 2300 AC
Primary, 275 DC Volts.

CUTTING MACHINE

12AA Goodman with truck.

I BEAMS

10 Inch-Heavy Section.

HAND WINCHES

All-Steel. Three Ton Capacity.

COPPER WIRE

500,000 CM Bare and Insulated.
4/0 Grooved and Figure 8 Trolley.

RAIL

100 Tons 25# Rail.

110 Tons 70# Rail.

40 Tons 80# Rail.

All-in excellent condition.

25# STEEL TIES

44" Gauge-Like New.

MANSBACH METAL COMPANY

Priced to Sell

Logan, W. Va.

Phone 1071

We Buy, Sell, Trade - What Have You?

CONVEYORS

Belt, Bucket, Drag or Gravity
Shaker & Vibrating Screens
Truck Scales Coal Crushers
Coal Drills Mine Fans
Electric Motors - Floor Cranes
Mining and Stripping
Equipment

WHAT DO YOU NEED?

THE INDUSTRIAL EQUIPMENT CORP.
910 First National Bank Bldg., Atlantic 6307
Pittsburgh 22, Pa.



TRANSFORMERS
CIRCUIT
BREAKERS

NEW - REBUILD - RENTALS

1 H.P. to 2500 H.P. motors in stock
D.C. A.C., 25-50-60 Cycle

ELECTRIC EQUIPMENT CO.
ROCHESTER 1, N. Y.



CASH
FOR YOUR
SURPLUS



SEARCHLIGHT SECTION

M-G SETS — ROTARIES

3 ph. 60 cy.

500 KW West. 550 v. — 710 HP 2300 v. Syn.
450 KW G.E. 275 v. — 2300 v. Syn. 720 RPM
300 KW G.E. Rotary 275 v. with 3-110 KVA 2300/
4000 v. Transformers and control.
300 KW West. 250 v. — 432 HP 2300 v. Syn.
150 KW Rldg. 275 v. — 225 HP 800, 2300 v.
150 KW West. 125-225 HP Ind. 2200/440/220 v.
100 KW West. 275 v. — 150 HP Ind. 440/220 v.
100 KW West. 125 v. — 150 HP Ind. 2200/440/220 v.
50 KW G.E. 125 v. — 75 HP 2200/440/220 v.
25 KW G.E. 125 v. — 50 HP Ind. 440/220 v.
10 KW 125 v. — 15 HP Master 440/220 v.

MOTORS AND GENERATORS

300 HP. West. CW 2300/3.60 600 RPM S.R.
300 HP. G.E. 1 M 2300/3.60 650 RPM S.R.
150 HP. G.E. KT 220/440 v. 605 RPM
150 HP. G.E. EM 220/440 v. 605 RPM
150 HP. G.E. 800, 220/440/3.60 600 RPM
125 HP. G.E. KT 220/440 v. 605 RPM
100 HP. AL. CS. AWY 2200/3.60 600 RPM S.R.
100 HP. G.E. 1 M 440/220/3.60 650 RPM S.R.
300 KW West. 250 v. 1200 RPM Gen.
150 KW Triumph 250 v. 600 RPM Gen.
150 KW G.E. 500 v. DC 1500 RPM Gen.
125 KW West. RK 250 v. 600 RPM Gen.
100 KW West. RK 250 v. 600 RPM Gen.
90 KW West. RK 250 v. 600 RPM

TRANSFORMERS

3-250 KVA G.E. Type H-KS 2300/1000-220/
440 v.
2-100 KVA All. Ch. 2200 v. — 220 v.

PROMPT SHIPMENT ON ALL SIZES A. C. AND D. C. REBUILT MOTORS.

MOORHEAD ELECTRICAL MACHINERY CO.
Pittsburgh 19, Pa. Mayflower 7900

LOCOMOTIVES

Haulage and Gathering

20-25 Ton G.E. outside 4" armorplate frame,
steel tires, 31W, 824 BB Motor, 125 HP.
each, 500 v., 42 or 44" Ga.

13 Ton West. 36 or 40" Ga. 250 v.
10 Ton Jeff. 250 v. 36, 42" Ga. MH 110 Motors.
8 Ton Goodman 200 v. 42 1/2" Ga.
8 Ton Goodman 250 v. 42 1/2" Ga.
6 Ton Jeff. 250 v. 36 1/2" Ga. 42" Ga.
6 Ton West. 250 v. 304 Motors 36" Ga.
3-4 Ton Goodman 30 B 250 v. 42" Ga. Gath.
2-4 Ton Goodman, 250 v. 42" Ga. sgl. motor, gath.

STORAGE BATTERY LOCOMOTIVES

6 Ton Jeff. Permissible RH Motor, 36 1/2" Ga.
6 Ton G.E. Permissible RH Motors, 36-44" Ga.
3 1/2 Ton traction Type A 36-42 Ga.

MINING MACHINES

2-112 Ed Goodman Universal, 220 v. 7 1/2" bars.
2-12 DA Goodman 250 v. DC 6 1/2" to 7 1/2" bar.
2-35 B Jeffrey, 250 v. 6 1/2" to 7 1/2" bars.

HOISTS, CRANES AND PUMPS

300 HP Lidgerwood sgl. fixed drum, 6 1/2" dia. 3'
bars, 5" diameter cable, 300 HP
2300 4000 3.60 Westing. CW

75 HP Diamond fr. 48" dia. 25" face, sgl.
75 HP Mead Morrison sgl. fr. drum—AC Motor.
1-50-75 HP 2 drum Mead Morrison sgl.
30 HP Hoyt & Patterson sgl. fixed drum, 4' dia.

2-600 GPM, 2300 ft. head, 8 stage Goulds,
centrifugal pumps, complete on bases ex-
tended for 3500 r.p.m. motors.

1-Hammer mill, American Pulverizer Co.,
S.T.T. 2257, mounted on base and direct
coupled to 50 HP, 440 volt, squirrel cage
motor, new and unused.

1-500 HP, class 2 at 600 input, Farrel-
Birmingham, 5 to 1 ratio, type SRH, size 30
encased, Timken fitted, single herringbone
reducer, new and never used.

Reduction Gears

1-Used Fawcus H.B. 36, 7 to 1 ratio (36"
centers) rated 800 HP at 720 input.

1-New Bradford 24S 24, 6.06 to 1 ratio.

1-New D. O. James 16 D double herring-
bone reducer, 11.6 to 1, rated 340 mechanical
at 1200 input.

1-New Westinghouse-Nutall (21" center)
ratio 5.63 to 1, 200 HP at 1150 input.

1-Used H & S RS 4000 (20" center) 7 to 1
ratio, 250 HP at 720 input.

1-Used Cleveland worm, series 3, ratio 10 1/2
to 1, 175 HP at 900 input.

30—Small reducers 5 to 30 HP various
makes and ratios.

STEWART BOLLING & CO., INC.

3190 E. 65TH ST.

CLEVELAND, O.

FOR SALE OR RENT

ALL LATE MODELS

1-P&H Shovel, 1955 LC, 2 1/2 c.y. New
Aug. 1945.
1-P&H Shovel, 1955, 3 c.y. New Aug.
1945.
1-50-10 K.W., 2 1/2 c.y. New Feb. 1945.
1-Mantowac 3000A, 1 1/2 c.y. New Mar.
1947.
Combination drag and shovel front.
1-Lorain 520, 2 c.y. New Mar. 1947.
Rocket Bucket.
1-Caterpillar D-8, Late models, with dou-
ble power switches.

FOR SALE

1-Eucild Pumps, 9 c.y. 150 HP. Cam-
mions, New Sept. 1945.
1-Ward LaFrance trucks, 10' Models,
12-14 ton payload. New Jan. 1945.
1-Wagon Drill, Ingersoll Rand, New
Nov. 1945.
1-Hitchell Drill, New Nov. 1945.
1-Coal Loading Bucket, 2 1/2 c.y., 6 teeth,
for Manitowac 3000A Shovel, New.
2-Drum Line Buckets, 2 c.y., slightly
used.

BOWER MINE, INC.

BOX 1589 CLARKSBURG, W. VA.
Telephone:
Clarksburg, W. Va., Flemington 79.

NON-CORRODING PIPE FOR SALE

Textolite pipe manufactured for the
Government by General Electric Co.
and now surplus. Unused. Resists
the effects of corrosive waters and
atmospheres, chemical salts and solu-
tions, solvents, gasoline, etc. A high
pressure pipe, 5" O.D. with 1/2" wall.
Offered below iron pipe prices, al-
though original cost and present
manufacturer's price is several times
that of iron pipe. Available with
plain ends or standard threads. Coup-
plings of similar material also avail-
able. Prices, specifications and tech-
nical data, with a sample of material
free on request. This material will
stand the most rigid technical exami-
nation.

VEG-ACRE FARMS

Irrigation Division
Forestdale, Mass.

FOR SALE

3 Manitowac Stripping Shovels
—Model 3500—1947 and late
1946 — CHEAP. Excellent
condition.

V. P. Serodino, Inc.

7 W. North Bend Rd.

Cincinnati 16, Ohio

Valley 3161

IRON and STEEL PIPE

New and Used

Large stocks, all sizes
attractive prices

L. B. FOSTER COMPANY

P. O. Box 1647

Pittsburgh 30, Pa.

FOR SALE

4 Goodman Style GIBBYT permissible Shak-
er Conveyors, latest type with 300 ft. size
3 troughs, manual Type HAD duckbill
and 20 HP Westinghouse AC motor, 3
phase, 60 cycle, 220 volt, 1140 RPM.
4 Sullivan Class 7B Cutting Machine, with
50 HP AC motor, 3 phase, 60 cycle, 220
volt, and Bowdell cutter bar and chain, 9
ft. long, 5" kerf.
4 Chicago Pneumatic Style 574-700 post
mounted coal drills, 220 volt, 60 cycle, 3
phase, AC.
All of above to include usual accessories
and guaranteed to be in A-1 condition.
New in 1945.

KAISER COMPANY, INC.

Iron & Steel Division
Sunnyside, Utah

FOR SALE

1-200 KW Westinghouse Motor-
Generator Set, 275 V. DC, 2200 V.
AC. Complete with DC and AC
Panels.
4-Model FFG La-Del Face Convey-
ors, 45' long, 250 V. DC, Permissible
—Practically new.
1-12BU-7E Joy Jr. Loading Machine,
250 V. DC.

W. J. SHEARN

210 Mercer Street Beckley, West Va.
Phone 8173 Beckley

FOR SALE

600 tons of Sun Rise coal weekly,
R.O.M. only.
Analysis: Moisture0.71%
Volatile matter...29.30%
Fixed Carbon...65.59%
Ash4.40%
Sulphur0.81%
B. T. U. Det....14.424

Shipping point, Grundy, Buchan-
an County, Virginia. Address all
correspondence to

J. G. BUSTON

Tazewell, Virginia

Caterpillar Tractor, Model 30 PS Series
w/ side boom.
Caterpillar Tractor Mod. 20, PL Series w/
end winch.

BRADFORD SUPPLY COMPANY

Wayne, Wood County, Ohio

Auto Car 1943 Model U7144 w/ Enclosed
Cab.
Boiler Tubes • Pipe
Gas Engines • Machinery

Near Toledo

Jeffrey 20 x 36 double roll crusher
52A Barber-Greene Bucket Loader
54B Barber-Greene Bucket Loader
50 HP Shaft Hoist
3 yd. Byers Crane
3 yd. Byers Shovel-Crane, pneu. tired

J. T. WALSH

Brisbane Bldg. Buffalo 3, New York

SEARCHLIGHT SECTION

MINING CONGRESS SPECIAL BARGAINS

PRACTICALLY NEW 20-TON JEFFREY MAIN LINE LOCOMOTIVE

1-Jeffrey 20-ton Haulage Locomotive, Ser. No. 8548.
Motors—2 MH-2160, 250 V DC, 150 HP each.
Controller type 30-A with magnetic switch.
Contactors Class 10 — Class 12-A.
Armature frame 10,000 — 3"
Drawbar pull 10,000 — 42"
Length overall 10'6"
Height overall 42"
Width overall 68"
Wheelbase 27"
Axle diameter 5"
Track gauge 42"
Speed 10.6 MPH
Solid roll steel gears.
Anti-friction armature bearings.
Anti-friction journal box bearings.
Screw-adjusted Westinghouse air brakes and
sanding.
Jeffrey steel strip resistance.
This Locomotive was purchased late in 1940 and looks
like new. We are in a position to offer it, subject
to immediate inspection and prior sale, at a very at-
tractive price. It can be easily changed to 48" gauge
merely by shoving the wheels out on the axles.

LOCOMOTIVES 250 VOLT, BALL BEARING

3-15-ton Jeffrey Type MH-105.
4-10-ton G.E. Type HM-830.
5-8-ton G.E. Type HM-815.
6-8-ton G.E. Type HM-807.
8-ton Goodman, Type HM-3204T.
2-6-ton G.E. Type HM-801.
3-6-ton G.E. Type HM-821.
6-ton Westinghouse, Type 905C.
4-8-ton Goodman, Type 33A14T.
The above Locomotives are from 36" to 48" gauge.
Gathering motors are all equipped with rails and
good cable. All are rebuilt and guaranteed.

ROTARY CONVERTERS

2-300 KW G.E. Synchronous Rotary Converters,
Type MCCB-1200, Form P, 275 volt.
3-200 KW G.E. Synchronous Rotary Converters,
Type MCCB-200-1200, Form P, 275 volt.
The above Converters are complete with switchboards
and all necessary switchgear including automatic re-
versing circuit breakers and transformers for 2500 volt.
1-300 KW Motor Generator Set, 1200 RPM, 250 275
volt DC, 3 phase, 60 cycle, 2300 volt AC, com-
plete with switchboard and all necessary switch-
gear including automatic reversing circuit breaker.
Rebuilt and guaranteed.

300 — LOW VEIN STEEL MINE CARS END LIFT, AMERICAN CAR & FOUNDRY COMPANY

Overall height	22"	Wheel base	30"
Overall length	11'0"	Timken bearing wheel diameter	14"
Overall width	18'0"	G.N. steel axle diameter	2 1/2"
Width overall	6'6"	75 cu. ft. capacity level full.	
Inside width	6'0"	Sprung bumper gate end.	
Track gauge	44"	Solid bumper tight end.	

Steel sides and ends, dia. 3 1/2"

Two (2) Phillips Crossover Dumps, Automatic, used with above Cars. These
Cars have just been taken out of service and are in excellent operating condition.

CUTTING MACHINES, 250 VOLT DC

17-11-B Sullivan, less than 3 years old.
3-35-L Jeffrey, permissible type.
4-512-CC Goodman, permissible type.
3-112-AA Universal Goodman, on tip-turn trucks.
2-7-AU Universal Sullivan Machines, late type.
42" gauge.
4-12-AA Goodman Standard.
1-28-U Jeffrey Track Mounted Universal Machine.
4-29-L Jeffrey Top Cutters.
4-29-L Jeffrey Bottom Cutters.
3-24-L Jeffrey.
1-29-C Jeffrey Permissible Top Cutter.
3-35-B Jeffrey, 7 1/2" Cutter Bar.

AC SHORTWALL MACHINES

3-Goodman Universal 112-CG-3A, on self pro-
pelled trucks, reel and cable, 7 1/2" cutter bar.
1-35-B Jeffrey.
6-11-B Sullivan, 12,000-14,000 series.

ELECTRIC HOISTS

2-Late type 900 HP Vulcan Hoists suitable for
shaft, slope or drift. Will haul 2000 or more
of 1 1/2" rope. Can be seen in operation.
Have other Hoists from 200 to 1,000 HP.

MEET US AT THE AMERICAN MINING CONGRESS COAL SHOW AT CLEVELAND MAY 9-12. STOP
AT OUR BOOTH NO. 1410. WE WILL HAVE LIST OF CONSIDERABLE AMOUNT OF LATE TYPE
EQUIPMENT THAT WE ARE BUYING FROM TWO VERY LARGE COAL MINES. THOSE IN CHARGE
OF OUR BOOTH AT THE COAL SHOW ARE:

FRANK J. WOLFE
JAMES C. LINDSAY
SHELDON J. WOLFE
F. M. "SPIKE" NEIL

WE SPECIALIZE IN BUYING OUTRIGHT COMPLETE MINES THAT ARE GOING OUT OF BUSINESS
OR FROM RECEIVERS IN BANKRUPTCY. ADMINISTRATORS OF ESTATES, ETC.

COAL MINE EQUIPMENT SALES COMPANY

106-30 BEASLEY BUILDING L.D. PHONE 34 TERRE HAUTE, IND.

DON'T MISS THE COAL SHOW AT CLEVELAND MAY 9-12



Frank J. Wolfe

LOADING MACHINES AND SHUTTLE CARS, 250 VOLT DC

6-32-E Joy Shuttle
Cars.
2-42E1 Shuttle Cars.
4-14-BU Joy, pedestal
type.
6-7-BU Joy.
4-1-BU Joy.
3-No. 5 W.ers.
Whaley.
2-BN-450 Goodman.
3-L-400 Jeffrey.
2-5-500 Jeffrey.

LOADING MACHINES, 220/440 VOLT AC

5-8-BU Joy. 3-7-BU Joy.

BELT CONVEYORS

4-Complete LaDel Belt Conveyors, 2000' centers,
36" belt, from 1 to 3 years old.
5-LaDel Belt Conveyors, 1000' centers, 26" belt.
2 practically new.
15-LaDel Shaker Conveyors.
All with motors and all appurtenances for complete
installation.

STRUCTURAL STEEL

ASTM A7-46

Immediate Delivery From Stock

310,000	6"	WF-Beams	205'	40'
235,000	8"	WF-Beams	315'	40'
215,000	10"	WF-Beams	495'	40'
180,000	12"	WF-Beams	655'	40'
125 Tons	12"	31.82 I-Beams	40'	
85 Tons	15"	42.92 I-Beams	40'	
90,000	7"	9.85 Channels	40'	
245,000	8"	11.52 Channels	40'	
550 Pc.	3"	x3/8" x5/16" x40' Angles		
710 Pc.	3"	x3/8" x3/8" x40' Angles		
440 Pc.	4"	x4" x5/16" x40' Angles		
70 Tons	1 1/2"	x1 1/2" x1 1/4" x20' Angles		
40 Tons	2"	x3/16" x20' Angles		
70 Tons	2 1/2"	x2 1/2" x1 1/4" x20' Angles		

GLAZER STEEL CORPORATION

2100 Ailer Avenue Knoxville, Tenn.
Telephone: 4-8601

EVERYTHING FOR THE TRACK FROM SWITCH TO BUMPER

SPECIAL OFFERING

We Offer 50,000 Good Used
Creosoted Cross Ties
Immediate Shipment



RAND BLDG. BUFFALO 3, N. Y. EMPIRE BLDG. BIRMINGHAM 3, ALA.

RAILS — CARS

All sections of rails and good workable second
hand cars, all gauges, also spikes, bolts, frogs,
switches and ties.

M. K. FRANK

400 Lexington Ave. New York, N. Y. 810 Park Bldg., Fifth Ave. Pittsburgh 22, Pa.
Reno, Nevada Carmichael, Pa.

TIPPLE

We have for sale one used five (5) track
tipple, Capacity of 4000 tons per day com-
plete with Shaking Screens, Three (3)
loading hoppers, Crushers and Vibrators,
feeder, and a 42 inch belt conveyor, app.
190 ft. center to center. This adaptable
to Slope or Strip mine, knocked down,
match-making for erection, and located
on RR siding and can be loaded im-
mediately. "Have all blueprints, erection
drawing, etc."

ALSO: have one Fairbanks-Morse Diesel
Electric Generating Unit (AC,
220-440 Volt, 360 HP, 300 KVA).

ALSO: Three (3) Used Fifteen (15) ton
SANFORD DAY Bottom Dump
Coal Haulage Trailers.

All subject to prior sale. If interested,
wire, write or phone for
further particulars.

DOWN STATE COAL CO., INC.

P. O. Box 87, De Soto, Illinois

SPECIALS — STEAM POWER

2-481 HP. Special Wt. Boilers 2000
2-251 HP. B&W. Sterling 2000
1-300 KW G.E. Turbo Dr. 2000 2000 N.C. A.T.
1-300 KW G.E. Turbo 3 on 2000 2000 N.C. A.T.
1-300 KW Turbo 2 on 2100 1800 1500 2000
N.C. A.T.
Air Comp. MD 2000 ft. 1500 ft. 1000 ft. 500
ft. 250 ft. F.R. SPV-10 1000 ft. 500 ft. 250
ft. NEW

INDUSTRIAL TRADING CO.

30 Church St. New York 7, N. Y.

For COMPRESSORS, DIESELS, PUMPS, etc.,
call us.

RELAYING RAIL

TRACK ACCESSORIES

MIDWEST STEEL CORP.

Gen. Of: CHARLESTON 21, W. VA.

Wardensburg

CHARLESTON, VA.

KNOXVILLE, TENN. * PORTSMOUTH, VA.

RELAYING RAIL

All Sizes

Track Accessories

LEFTON INDUSTRIAL CORP.

Genl. Office: 212 Victor St.

St. Louis 4, Mo.

BRAND NEW WIRE ROPE FOR SALE

Improved Flow Steel, preformed, Ind. Wire
Rope Center, 5/8" dia., 6x19, 13 reals—
2,000 ft. each reel.
Also 1 1/4"; 1 1/2"—6x19, Ind. Wire Rope
Center.

In addition to, all sizes hemp center, both
black and galv.
Drop forged galv. wire rope clips, all sizes.
Chain hoists, proof coil chain, conveyor belt-
ing.
Prices way below market. Immediate ship-
ment.

TERRENCE P. WYNN

BOX 118
NEW YORK 33, N. Y.

Special Offer
COAL HAULERS
 AVAILABLE FOR IMMEDIATE
 DELIVERY—LOCATION INDIANAPOLIS
3 DART 120 TRACTORS with
 Austin-Western Trailers

Three Dart Model 120 Tractors powered by 6 cylinder HXE HERCULES gasoline engines, 14:00 x 24-20 ply rear tires, 11:00 x 24-12 ply front, Austin-Western 25-ton air controlled bottom dump trailers with 14:00 x 24-20 ply tires.

ALSO AVAILABLE

8 Dart Model 250-444 Tractors with 200 H.P. Cummins Diesel Engine and 30 Ton Austin Western Bottom Dump Trailers.
 2 FBRT Walters all wheel drive gasoline powered tractors with 20 Ton Austin Western Trailers.

DART 120 TRACTORS with
 Austin-Western Trailers



REID-HOLCOMB CO. Inc. 1815 KENTUCKY AVENUE
 INDIANAPOLIS, INDIANA

• FOR SALE •

**HOLMES
 ENDLESS ROPE**

CAR HAUL MACHINE

WITH MOTOR, ELECTRICAL EQUIPMENT

AND HAULAGE CABLE.

COMPLETE WITH ROPE GRIPS.

Direct Inquiries to:

RAIL TO WATER TRANSFER CORPORATION

**101st & Calumet River
 Chicago 17, Illinois**

FOR SALE

25 ALL STEEL, FOUR POCKET, 70 TON HOPPER CARS equipped with MULTI WEAR STEEL WHEELS. Located near Philadelphia.

CHARLES DREIFUS CO.

12 S. 12th St., Philadelphia 7, Pa.

FOR SALE

CATERPILLAR BULLDOZER: D7 with LeTourneau cable controlled bulldozer, Overhauled, 100 hrs. 47' 9" on
COMPRESSORS: Chicago Pneumatic with D7700 Caterpillar diesel engines, 210 cu. ft. on pneumatic tires, \$1,875.00.

O. C. EVANS
 Mt. Sterling, Ky.

FOR SALE FROM MINE OPERATOR

1. Reliance Electric and Engineering Co. Motor generator set, 75 kW capacity. Motor 200 V, DC, generator 250 V, DC, mounted on base. Complete unit brand new and never operated.
2. Reliance Electric and Engineering Co. Motor generator set, 40 kW capacity. Motor 500 V, DC, generator 225 V, DC, both units in good operating condition.

The Davis Coal and Coke Co., Thomas, West Virginia

FOR SALE

150 Steel Mine Cars—36" Gauge—28" High —Eld Dump—Goodman Short Wall Mining Machines—36" Gauge—Several Small Room Hoists.

These may be seen at No. 1 Mine of the Vinton Coal & Coke Company Vintondale, Penna.

FOR SALE:

Failing '36 Drilling Rig

Mounted on 1940 Ford. In good condition and ready to drill. This drill is used for coring coal.

CLEMENS EXPLORATION
 Princeton, Indiana

"SEARCHLIGHT"

IS

Opportunity Advertising

—to help you get what you want,
 —to help you sell what you no longer need.

Take Advantage Of It

For Every Business Want

"THINK SEARCHLIGHT FIRST"

SEARCHLIGHT SECTION

FOR SALE NARROW GAUGE EQUIPMENT

36" Gauge

- 1—8 ton Whitcomb Locomotive, gas.
- 1—20 ton Davenport Locomotive, steam-operated, 165# W.P. A.S. M.E. boiler.
- 3—12 ton Whitcomb Locomotives, gas.
- 46—4 yd. Koppel Quarry Cars.
- 28—5 yd. Koppel Dump Cars.

24" Gauge

- 1—4 ton Plymouth Locomotive, gas.
- 1—5 ton Whitcomb Locomotive, gas, Type 3-SP.
- 30—1 cu. yd. all steel Koppel Cars.

IRON & STEEL PRODUCTS, INC.

13484 S. Brainerd Ave.

Chicago 33, Illinois

"ANYTHING containing IRON or STEEL"

MINE HOISTS: All steel construction, single drum, 5' dia., 2700 ft. 1 1/2" rope, single line pull capacity 72,000 lbs., with herringbone gears to operate at a speed of 200 or 600 FPM; motor 400 H.P., 550 RPM, 3 phase, 60 cycle, 2200 volt, complete with all control equipment. Condition like NEW. Located in California. 1—Single Drum 60" dia., 42" face, 200 H.P., G.E. Motor, 3 phase, 60 cycle, 2200 volt, complete with control equipment.

CONVEYOR BELT: Large quantity of Goodrich 83 TYPE L-ONE LARGE CONVEYOR BELT, 42" wide, 6 ply, 42 oz. duck 1/32" top cover, 1/16" bottom cover, on original reels, all NEW. NATURAL RUBBER, with or without mechanical parts.

DRAGLINE: 6 yd. capacity 110' boom, 2200 volt, A.C.

BEAST HOLE DRILLS: Bucyrus Erie 25' and 42' gas and diesel, 97' lifts.

PULVERIZERS: Hardinge Conical Ball Mill 6' x 22", manganese steel lined, herringbone gears, with motor and V-belt drive. Jeffrey 24 x 14" swing Hammer Pulverizer, shop No. 1159.

A. J. O'NEILL

Lansdowne Theatre Building

LANSDOWNE, PA.

Phila. Phones: Madison 8300-8301

LOCOMOTIVES

- 1—10 Ton Jef. with MH110, 250 V. Motors.
- 1—10 Ton West. with 9072 Motors.
- 1—8 Ton G.E. with HM319 BB Motors.
- 1—8 Ton Jef. with MH 100 250 V. BB Motors.
- 1—6 Ton G.E. with HM323 BB Motors.
- 1—6 Ton Jef. with MH105 250 V. BB Motors.
- 1—2 1/2 ton Brookville, 36" track gauge.

CUTTING MACHINES

- 2—25HH Jef. 250 V D.C. Short Wall.
- 1—25HH Jef. Short Wall A.C.
- 1—25H 250 V D.C. Short Wall.
- 1—124 E.J. Goodman Slabbing, D.C.
- 1—112 A.A. Goodman Short Wall.

LOADING MACHINES

- 2—14 BU D.C. on Cais.
- 1—7 BU Joy D.C. on Cais.
- 1—8 BU Joy D.C. on Cais.
- 2—360 Goodman, 42" on wheels.
- 1—L400 Jef. on wheels.

SHUTTLE CARS

- 1—42E Joy Cable Reel.
- 1—3242 Joy Cable Reel.
- 1—68C-5HNC Joy Cable Reel. (NEW).

We have Motor Generator Sets, Crushers, Motors, Pumps, Compressors, Rotary Converters and etc.

TIPPINS MACHINERY CO.

PITTSBURGH 6, PA.

BUY NOW—IMMEDIATE DELIVERY

NEW—Gimes 20" B.C. Crank Shaper. Rapid traverse, Niles, B & Pond 200 tons Hydr. Horiz. Wheel Press. Bradley 200" Helve Hammer. LeBlond 30"30" Q.C.G. Engine Lathe. Cincinnati 24 and 25 High Power Horiz. Millers. Columbia 32" B.G. Hvy. Duty Shaper.

FALK MACHINERY COMPANY

18 Ward St., Rochester, N. Y. Phone Main 6347

for IMMEDIATE DELIVERY of RUBBER PRODUCTS

CALL

WIRE

WRITE CARLYLE

THE RUBBER HEADQUARTERS

CONVEYOR BELTING,
TRANSMISSION BELTING,
ELEVATOR BELTING,
FIRE, WATER, AIR,
STEAM, SUCTION and
WELDING HOSE.

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	24"	4	1/8"	1/32"
42"	5	1/8"	1/16"	20"	3	1/8"	1/32"
36"	6	1/8"	1/16"	20"	4	1/8"	1/32"
30"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	5	1/8"	1/16"	16"	4	1/8"	1/32"
26"	5	1/8"	1/32"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"

Inquire For Prices — Mention Size and Lengths

TRANSMISSION BELTING

ENDLESS "V" BELTS

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

For Prices — Mention Size and Lengths

SPECIAL OFFER . . . HEAVY DUTY RUBBER HOSE

FIRE HOSE

APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

I.D. Size	Length	Per Length
2 1/2"	50 feet	\$28.00
"	25 "	16.00
2"	50 "	23.00
"	25 "	13.00
1 1/2"	50 "	20.00
"	25 "	11.00

Specify Thread On Couplings

AIR HOSE

I.D. Size	Length	per Length	Universal Couplings
1 1/2"	25 feet	\$5.00	\$1.50 Pair
"	50 "	10.00	1.50 Pair
1"	25 "	7.50	1.50 Pair
"	50 "	15.00	1.50 Pair
3/4"	25 "	10.00	1.50 Pair
"	50 "	20.00	1.50 Pair

LARGER SIZES ALSO AVAILABLE

All Prices—Net — F.O.B. New York

WATER HOSE

I.D. Size	Length	per Length	I.D. Size	Length	per Length
3/4"	25 feet	\$4.25	"	35 feet	\$10.50
"	50 "	8.00	"	40 "	12.00
1"	25 "	6.25	"	50 "	15.00
"	50 "	12.50	1 1/2"	25 "	10.00
1 1/2"	25 "	7.50	"	35 "	14.00
			"	50 "	20.00

Each Length with Couplings Attached

CARLYLE RUBBER CO., Inc.

62-66 PARK PLACE, NEW YORK 7, N. Y.

Phone: BARclay 7-9793

FOR SALE AT RIGHT PRICE:

1—Sterling Diesel Tandem Tractor with a new H.B. 600 Cummings Motor. Tractor completely rebuilt two months ago by Sterling Motors.

1—90 Ton Rogers "I" Beam Trailer.
1—Rogers Low-boy 80 Ton Drop Deck.
16—750x18 Tires.

WANTED

1—Model 132 Hanson Shovel Front.

Write

T. J. KILMAIN SALES CO.

North Mt. Vernon Ave., Uniontown, Penna.

or call Uniontown 5400

COAL AGE ADVERTISERS IN THIS ISSUE

An asterisk preceding manufacturer's name indicates detailed information may be found in the 1948-49 MINING CATALOGS

*Alumite Div., Stewart-Warner Corp.	173
*Allis-Chalmers Mfg. Co.	8-9, 36a, 57, 65
*Aluminum Co. of America	183, 197
*American Car & Foundry Co.	36
*American Crucible Products Co.	170
*American Cyanamid Co. (Expl. Dept.)	113
*American Hoist & Derrick Co.	150
*American Optical Co.	6
*American Pulverizer Co.	24
*American Steel & Wire Co.	81
*Anasconda Wire & Cable Co.	120
*Ansonia Electrical Div., Noma Electric	181
*Arco Steel Corp.	154
*Armstrong-Bray & Co.	197
*Ashland Oil Co.	147
*Atlas Powder Co.	184

*Baltimore & Ohio Railroad	133
*Barber-Greene Co.	107
*Belmont Radio Corp.	187
*Bemis Bro. Bag Co.	162
*Bethlehem Steel Co.	33, 40
*Bird Machine Co.	7
*Bituminous Casualty Corp.	84
*Bituminous Coal Institute	61
*Bisby-Zimmer Engrg. Co.	142
*Bristol Co.	180
*Bucyrus-Erie Co.	58

*Cambridge Wire Cloth Co.	136-137
*Cardox Corp.	31
*Carter Products Corp.	178
*Caterpillar Tractor Co.	67
*Central Mine Equipment Co.	153
*Centrifugal & Mechanical Industries, Inc.	180
*Cheatham Electric Switching Device Co.	108
*Chesapeake & Ohio Railroad	68
*Chicago Portable Co.	198
*Cincinnati Mine Machinery Co.	44
*Cities Service Oil Co.	139
*Coal Operators Casualty Co.	176
*Colorado Fuel & Iron Corp.	190

*Dayton Rubber Co.	131
*Deister Concentrator Co.	156
*Deister Machine Co.	176
*Deming Co.	195
*Detroit Diesel Engine Div., General Motors	47
*Diamond Supply Co., Inc.	164
*Dooley Bros.	171
*Duff-Norton Mfg. Co.	152
*du Pont de Nemours & Co., E. I., Rayon Div.	53
*du Pont de Nemours & Co., E. I., Expl. Dept.	163

*Eaton Mfg. Co.	Insert between pp. 52-53
*Electric Storage Battery Co.	103
*Ensign-Bickford Co.	72
*Erie Mfg. Co.	141
*Euclid Road Machinery Co.	123

*Fairbanks-Morse & Co.	46
*Farmers Engineering Co.	164
*Firestone Tire & Rubber Co.	49
*Flexible Steel Lacing Co.	195
*Flood City Brass & Electric Co.	194
*Flory Mfg. Co.	199
*Foote Mineral Co., Inc.	199
*Fulton Bag & Cotton Mills	194

*Gates Rubber Co.	16
*General Electric Co., Apparatus Dept.	37
*General Tire & Rubber Co.	151
*Goodman Mfg. Co.	26-27
*Goodrich Co., B. F.	1
*Goodyear Tire & Rubber Co.	12-13
*Gorman-Rupp Co.	128
*Goyne Steam Pump Co.	193
*Greensburg Machine Co.	172
*Gulf Oil Corp.	117
*Gulf Refining Corp.	117
*Guyan Machinery Co.	188, 178

*Hamilton Rubber Mfg. Corp.	111
*Hammond Co., J. V.	198
*Harnischfeger Corp.	29
*Hazard Insulated Wire Works	4
*Hazard Wire Rope Div., American Chain & Cable Co.	Third Cover
*Hewitt Rubber of Buffalo, Div. of Hewitt-Robins, Inc.	62-63
*Hendrick Mfg. Co.	172
*Holmes & Bros., Rohl	146
*Homer Mfg. Co., Inc.	195

Hough Co., Frank G.	177
*Hubburt Oil & Grease Co.	2-3

*I-T-E Circuit Breaker Co.	149
*Independent Pneumatic Tool Co.	127
*Indiana Foundry Co.	193
*International Harvester Co.	25

*Jeffrey Mfg. Co.	Insert between pp. 20-21
*Jenkins Bros.	167
*Jones & Laughlin Steel Corp.	109, 161
*Joy Mfg. Co.	17, 33, 70-71

*Kennametal, Inc.	169
*Koppers Co., Inc.	126

*Laughlin Co., Thos.	144
*Le Tourneau, Inc., R. G.	38-39
*Leuchten & Sons Rope Co., A.	59
*Link-Belt Co.	Fourth Cover
*Long Super Mine Car Co.	170

*Mack Trucks	43
*Macwhythe Co.	69
*Manhattan Rubber Div.	118
*Marion Power Shovel Co.	52
*Marlin-Rockwell Corp.	188
*McGraw-Hill Book Co.	194, 197
*McLanahan & Stone Corp.	20
*McNally-Pittsburg Mfg. Co.	36-37
*Merrick Scale Co.	174
*Morris Machine Works	148
*Mosebach Elec. & Supply Co.	166
*Mosler Safe Co.	135
*Mott Corp. Dividing Co.	166
*Myers-Whaley Co.	45

*Nachod & United States Signal Co.	198
*National Electric Products Corp.	21
*National Malleable & Steel Castings Co.	66
*New York Central System	18-19
*Norma-Hoffmann Bearings Corp.	64

*O. K. Clutch & Machinery Co.	101
*Ohio Brass Co.	14-15, 121
*Ohio Oil Co.	105
*Oliver Corp.	159
*Osmose Wood Preserving Co. of America	168

*Pangborn Corp.	140
*Paris Mfg. Co.	191
*Pennsylvania Crusher Co.	155
*Pennsylvania Drilling Co.	198
*Pittsburgh Gear Co.	45
*Pittsburgh Knife & Forge Co.	45
*Post-Glover Electric Co.	50
*Preformed Wire Rope Information Bureau	36D

*Quaker Rubber Co.	143
*Queen City Machine Tool Co.	193

*Raybestos-Manhattan, Inc., Manhattan Rubber Div.	118
*Ready-Power Co.	162
*Republic Rubber Div., Lee Rubber & Tire Corp.	157
*Robins Conveyors, Inc., Div. of Hewitt-Robins, Inc.	62-63
*Rockbestos Products Corp.	186
*Roehling's Sons Co., John A.	25
*Rome Cable Corp.	165
*Ruberoid Co.	142

*Sanford-Day Iron Works, Inc.	56
*Schramm, Inc.	138
*Screen Equipment Co., Inc.	130
*Searchlight Section	199-207
*Simples Wire & Cable Co.	41
*Sinclair Refining Co.	22-23
*Smith Engineering Works	175
*Soco-Vacuum Oil Co., Inc.	60
*Standard Oil Co. (Indiana)	34-35
*Star-Jack Co.	176

*Templeton-Kenly & Co.	150
*Texas Co.	10-11
*Thermoid Rubber Div., Thermoid Co.	115
*Timken Roller Bearing Co.	183

*United States Rubber Co.	145
*United States Steel Subsidiaries	51, 55
*United States Steel Supply	55
*Upon-Walton Co.	30

*Victaulic Co. of America	132
*Vulcan Iron Works	134

*Walworth Co.	52B
*Wedge-Wire Corp.	178
*Westinghouse Air Brake Co.	199
*Westinghouse Electric Corp., Second Cover	
*Whitney Chain & Mfg. Co.	42
*Willey & Sons, Inc., A. R.	179
*Wyandotte Chemicals Corp.	174

PROFESSIONAL SERVICES 182

SEARCHLIGHT SECTION Classified Advertisings

EMPLOYMENT	
Positions Vacant	199
Selling Opportunities Offered	199
Positions Wanted	199

EQUIPMENT	
(Used or Surplus New)	
For Sale	200-207

WANTED	
Equipment	199

ADVERTISERS INDEX

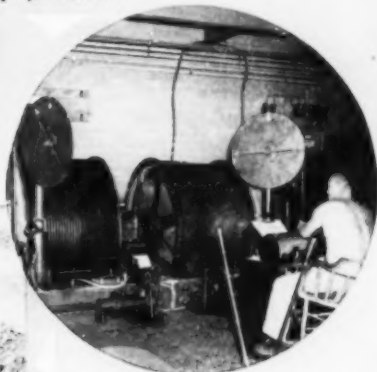
Bennett Equipment Co., R. H.	203
Bolling & Co., Inc., Stewart	204
Bonded Scale & Machine Co.	200
Bower Mine, Inc.	204
Bradford Supply Co., Inc.	204
Buston, J. G.	204
Carlisle Rubber Co., Inc.	207
Cincinnati Machinery Co., Inc.	207
Clemens Exploration Company	206
Coal Mine Equipment Sales Co.	205
Davis Coal & Coke Co.	206
Driefus Company, Charles	206
Dixon State Coal Co., Inc.	205
Electric Equipment Company	201
Electric Service Co., Inc.	202
Evans, O. C.	206
Falk Machinery Co.	202, 207
Florence Machinery & Supply	201
Foster Co., L. B.	204
Frank, M. K.	205
Gillespie & Son, Thomas	202
Glazer Steel Corp.	205
Greensburg Machine Co.	202
Guyon Machinery Co.	202
Hawkins & Company	201
Hext & Patterson, Inc.	199
Industrial Equipment Corp., The	201
Industrial Trading Co.	205
Iron & Steel Products, Inc.	207
Kaiser Co., Inc.	204
Kilham Sales Co., Inc., T. J.	207
Kirk Company, Wallace E.	200
Leffon Industrial Corp.	205
Locke Co., C. B.	200
MacCabe Co., T. B.	203
Manush Metal Co.	203
Midwest Steel Corp.	205
Mississippi Valley Electrical Machinery Co.	204
Morrison Railway Supply Corp.	205
O'Neill, A. J.	207
Rail to Water Transfer Co.	206
Roid-Holcomb Co.	206
Serdonio, Inc., V. P.	204
Sherrin, W. E.	204
Tupins Machinery Co.	207
Vez Acre Farms	204
Vinton Coal & Coke Co.	206
Wagner Co., Arthur	202
Yalsh, T. E.	204
Z. W. Terrence P.	204

Improved Performance with **LAY-SET** PREFORMED

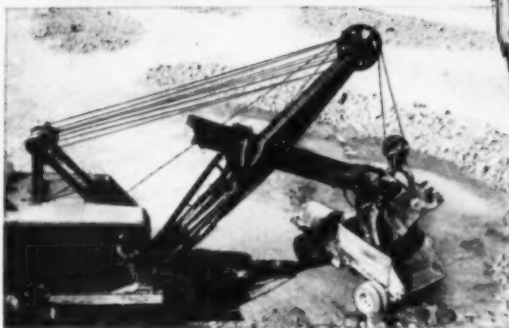


Suspended between heaven and earth is this 4-ton, 10-foot square cupola which enhanced the beauty of a 19th Century building. Serving only as an ornament, the cupola was finally condemned. Here was a job for a contractor with the right equipment. Contractors everywhere know that the *improved performance* of **LAY-SET** Preformed Wire Rope . . . and Acco Registered Wire Rope Slings . . . makes any job easier . . . reduces costs.

Up-to-date hoisting machinery, an alert operator, and **LAY-SET** Preformed Wire Rope mean greater safety and freedom from shutdowns. Coal mine, iron mine, "moly" mine . . . wherever a hoisting or haulage rope is used . . . **LAY-SET** Preformed means *improved performance*.



Down in the pit, out on the road, the power shovel digs in and changes the earth's profile. Rope life may be long . . . or short. **LAY-SET** Preformed is engineered to give *improved performance* . . . to make the rope last longer.



Improved performance comes from a combination of top quality wire rope **PLUS** correct recommendations. Hazard offers you this combination in **LAY-SET** Preformed **PLUS** a nation-wide distributor organization. Always ask for **LAY-SET** Preformed . . . the Green Strand Wire Rope.

ACCO

In Business for Your Safety



HAZARD WIRE ROPE

A DIVISION OF AMERICAN CHAIN & CABLE

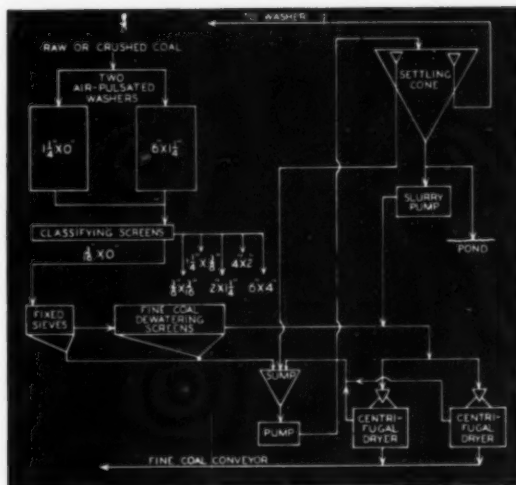
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.



Better Coal *through* Better Preparation



at the
**ENOCO
MINE**



Space does not permit showing all the Enoco preparation units in this flow sheet. This represents the two Link-Belt air-pulsated washers in connection with sieves, fine coal dewatering screens, settling cone and centrifugal dryers.

Although the coal at Enoco Collieries mine at Bruceville, Indiana is of high quality to begin with, the most modern preparation equipment was installed to assure the best possible fuel.

Link-Belt designed and built the tipple and washery. Run-of-mine coal is brought to the surface by a skip hoist for scalping at 6". The plus 6" is crushed and the product joins the minus 6" at a screen where a separation is made so that the 1 1/4" coal may be either washed or rescreened as raw coal. Plus 1 1/4" is all washed. When minus 1 1/4" is not loaded out as raw coal and is washed, it joins the plus 1 1/4" coal to produce a 100% washed coal output. Numerous sizes are separated by classifying screens, and loaded by booms equipped with car changing chutes serving six tracks. Provision for mixing any or all sizes before loading is made. Minus 3/16" coal is delivered to vibrating dewatering screens and then to centrifugal dryers. Dry coal is loaded separately or mixed.

We'll be glad to give you further details of this and other Link-Belt preparation plants. Get in touch with our nearest office.

LINK-BELT COMPANY

Chicago 9, Philadelphia 40, Pittsburgh 13, Wilkes-Barre, Huntington, W. Va., Denver 2, Kansas City 6, Mo., Cleveland 13, Indianapolis 6, Detroit 4, Birmingham 3, St. Louis 1, Seattle 4, Toronto 8.

11, 413

COAL PREPARATION AND HANDLING EQUIPMENT

Engineered,
Built and Backed by



LINK-BELT